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Health Education for the Millions*

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WE propose in this paper to discuss certain new procedures and technics in the field of health education. We have in mind the Museum of Hygiene as an instrument and will take this opportunity also to record the progress made in recent years in approaching this objective as a practical, functioning, educational institution.

We need not review here the immense literature on health education. We all know how continuous has been the effort to bring home to the great mass of people the knowledge necessary for avoiding disease and prolonging life. Somehow or other, we have not fully succeeded. We still pay a toll of at least a week of serious illness per capita each year. In addition, there is an unmeasurable but very serious loss of efficiency resulting not so much from clear-cut physical disability but from that hazy state in which a large part of our people find themselves wherein the body does not function well, where the joy of robust health is lacking. Diseases we know perfectly well how to eliminate such as smallpox, diphtheria, typhoid fever, and malaria still cause serious inroads on health and life. In some areas, they continue to constitute a first class public health problem. Tuberculosis and pneumonia can be greatly reduced in their ravages. Altogether, at least 10 years can be added to the expectation of life of each newborn child if we could but get to the people the knowledge which the advances of science have given us and if this knowledge could in some way be converted into appropriate action.

Earlier, the difficulty was primarily that we did not know the causes of diseases and of premature breakdown nor the channels through which these causes operated. In more recent years with an enormous accumulation of information and with increased public and private health facilities, the problem has been one primarily of distribution, namely, bringing to the great mass of people the benefits of the discoveries in the laboratory and from the current practice of medicine and public health. The school, the newspaper and maga-

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zine, and the spoken word, all have served and there is today a more widespread understanding of the principles of personal and social hygiene than ever before. Yet we have failed in bringing this knowledge and service to a very large part of our population. We have clearly underestimated the size of the job to be done. We have not reached the homes of the great mass of the common people. We must break the bottleneck in the flow of information from the laboratory and the clinics to the masses.

The fact is that the American people have not yet assimilated the spirit or content of the great achievements in medicine and in public health work. There are such sobering facts as the enormous growth of the Christian Science movement which clearly indicts our educational institutions for ineffective methods of teaching, and there are other evidences of crass ignorance, superstitions, and gullibility, as indicated by the size and profits of the business of quacks and nostrum venders. These facts, strikingly characteristic of our American life, show how far we still have to go in bringing home to the people the scientific basis upon which medicine and public health rest. We must find new ways.

We believe that the answer lies very largely in developing the mechanism of visual education. The eye is primarily the source of our increasing familiarity with the modern world. But we must not only see, we must handle. The educators know that the appeal must be to as many senses as we have in order to arouse interest, to hold attention, and for knowledge to become a part of us. We must develop a new mechanism on a huge scale for public health education. We believe that the answer lies in the methods of the modern museum.

Our Association took a very definite stand in this direction some years ago when it appointed the Committee on the American Museum of Hygiene which was to investigate the subject and take the necessary steps which would lead to the establishment of Museums where the experiment could be tried to discover the methods by which the mass of knowledge in the field of medicine and public health could be more effectively brought home to the people. We have made some progress in this direction and our paper will be, in a sense, a summary of the present state of the operations of this committee.

For one thing, our committee has been continuously active canvassing and exploring this field and in assembling information. In like manner, we have encouraged other groups to do so in various parts of the country. Today the museum idea is on everyone's tongue.

This year grants were made to the Association for the purposes of the committee by the Carnegie Corporation of New York and the Josiah Macy, Jr. Fund. These made possible the employment of a staff which includes Dr. Benjamin C. Gruenberg who has prepared a well thought out document which will shortly be available for distribution. In this there has been assembled the accumulated information of the committee and the views of leading educators, physicians, and museum executives. A well equipped architect, Woodner-Silverman, has likewise been at work studying the physical problem of housing the exhibits and visualizing for us an ideal institution.

These studies will interest health workers everywhere. They suggest the importance, the means of approach and the possibilities for service for a Museum of Hygiene in their communities.

Running side by side with these efforts our committee has attempted to

pave the way to the establishment of an experimental institution, believing that to create one museum somewhere would be the best way to stimulate the creation of museums everywhere. Obviously in a time of financial depression, it has not been an easy matter to obtain that large sum of money necessary for the building of a museum and the furnishing of it with the expensive laboratories, materials, and personnel which a museum should clearly have. Instead we have utilized such opportunities as have come our way. Taking advantage of our experience with the Century of Progress we took prompt action when the proposal for a New York World's Fair was announced. We saw in this undertaking a unique occasion for an experiment in mass health education. It is conservatively expected that more than 20 million people will pass through the gates of this Fair in 1939. Why not attempt to bring home to these millions the fundamental health knowledge which has been accumulated during the years? Here was a chance to try out various technics. Fortunately, an administration of intelligence and vision at the World's Fair headquarters saw eye to eye with us on the possibilities of this undertaking and has made it possible for us to work with them. The Fair has created an Advisory Committee on Medicine and Public Health drawing on our Museum Committee for personnel and including over 100 representative medical and public health leaders. An Executive Committee of this larger group has been given authority to plan and erect a large and representative exhibit. The Fair Corporation will build a beautiful structure exclusively for medical and public health exhibits and has appropriated a sizable fund to aid the committee in arranging for some of the basic exhibit material.

One of the very first decisions made by the Executive Committee was that the exhibit on medicine and public health must be planned to present a unified story, avoiding by all means the confusing result of selling space and allotting booths wherever they can be disposed of without reference to the presentation of any coördinated plan. It is not to be expected that a visitor can grasp the essentials of medicine and public health as a whole unless a very definite attempt is made to correlate the various parts of the exhibit. The New York World's Fair Committee on Medicine and Public Health has attempted to solve this problem by aiming for a completely scientific yet dramatic exhibit carefully planned in advance. Space as such will not be sold to commercial exhibitors. The committee has assumed the responsibility for the planning and financing of the entire exhibit. In this way it will from the very outset plan a completely rounded and coördinated presentation. This exhibit will, we believe, be the first attempt in America to produce a full size medical and public health exhibit at once scientifically sound and at the same time properly balanced as to its constituent parts.

The building itself is attractive and is extraordinarily well placed in relation to the chief attractions of the Fair. In all, there will be 80,000 square feet of space, making possible for exhibit purposes a net of a little over 37,000 square feet. We have divided our building into 4 main sections. There will be first a central Hall of Man, with a large focal exhibit on the human body in its normal functioning. Here will be demonstrated the anatomy and physiology of man, the dynamics of his various bodily functions, growth and reproduction, the glands of internal secretion and the organs of special sense. The problem of man's origin and his possible improvement will be considered. Exhibits in this hall will be similar to those which have been

developed by the German Hygiene Museum in Dresden, although many new models and features will be introduced.

Beyond the Hall of Man will be the Hall of Medical Science and the Hall of Public Health. Each of these halls has been divided into some 20 or more sections. The location of these sections between the two halls has been more or less arbitrary, although in general those which are principally medical have been assigned to the Hall of Medical Science, and those principally in the field of public health have been assigned to the Hall of Public Health. It is expected, however, that each subject will be treated in both its medical and public health aspects wherever it is located. In view of the limited space available, it will obviously not be possible to provide room for everything, and duplication must be avoided. The subjects selected for these sections are those which have seemed to the Executive Committee to be the most important, Such topics as the following have already been decided upon. In the Hall of Medicine, they are cancer, the filterable viruses, the common cold and influenza, pneumonia, tuberculosis, diabetes, the degenerative diseases of old age, heart disease, hospitals and the organized care of the sick, dentistry and oral hygiene, medical education, roentgenology, pharmacology and a number of allied topics. In the Hall of Public Health, sections will be devoted to health administration, the control of communicable diseases, tropical disease, children's diseases, maternal health, mental hygiene, industrial hygiene, safety, sanitary engineering, milk and food control, the conservation of sight, hearing and speech, superstitions, and finally a section devoted to a public health library and to an information service. The fourth main sub-division will be a theatre of hygiene, where a continuous program of lectures, demonstrations, and motion pictures will be given.

Each of these sections, amounting in all to about 50, will be under the supervision of a special sub-committee whose duty it will be to formulate plans for the exhibit in the special field with which it is concerned. The committees will deal primarily with subject matter rather than with methods of presentation. Each committee is being asked to state what are the outstanding non-controversial facts in its field which it believes the public should be told. And we have been extremely fortunate with our group of committeemen and committee chairmen. They make up a literal "Who's Who" in medicine and public health. We can be assured that their labors will bring into sharp relief the most important and interesting information in their fields. To give us an interesting and instructive presentation of the facts, we have brought together a group of exhibit experts and technicians of outstanding training and experience. They will know how to tell our story so dramatically and persuasively as to justify the enormous labor which this project will entail by the scientific committees.

The problem of financing this exhibit has received our careful attention. It is the belief of the Executive Committee that there are a considerable number of large and ethical commercial and non-commercial organizations which have such an important stake in having the facts of medicine and public health presented dramatically to the public that they will be willing to sponsor these exhibits and to defray their cost. Already, from contacts made and from the reactions of a considerable number of such organizations, we have reason to believe that our plan of financing through sponsorship will be realized with assurance that our original plan of setting up an exhibit entirely scientific in character and completely

coördinated as to its parts will be carried out. There is then an important departure from tradition in that this exhibit is planned on the basis of a presentation of subject matter rather than on the exploitation of products or organizations.

Our experience with the medical exhibit at the Fair, we hope, will lay the foundation for the establishment of our much hoped for American Museum of Hygiene. We believe that our exhibit will be so excellent that there will be a spontaneous demand to keep the materials intact and to exhibit them in a permanent institution—the first American Museum of Hygiene. This, of course, is our ambition; only time will prove the extent to which we are justified in our faith.

We have already in the discussion of our plans for the World's Fair exhibit outlined pretty much what are the chief characteristics of this permanent Museum of Hygiene. Briefly to recapitulate, we have in mind for such a museum a dynamic approach to the problem how to teach the average man and woman what they should know about their own physical organization; how the progress in medicine and public health affects them personally; and how they can make for themselves a better and more healthful life. Certainly this museum is not conceived in the old sense as a mausoleum for old bric-a-brac. It is rather a modern laboratory of health education. Its methods include the use of three dimensional materials, moving objects, and all other modern technics. It will experiment with new methods and new materials. It will attempt continuously to evaluate its own work and to serve the health educational field generally, including the education of adults as well as children—all social and economic strata—the various industries and professions.

There is really no reason why those of us who are in the field of public health education should not take a leaf out of the book of the circus people and capitalize on human curiosity. Why should the selling skills be the property of the nostrum venders, the quacks, and the self-aggrandizing cultists. We can adapt their skills for the service of man and the conservation of health just as well as they can use these skills for his exploitation. Nor are we concerned with a theoretical consideration. The Museum of Hygiene, as we have conceived it here, has already played a very important part in the education of the German people. The museum at Dresden and its expositions have after all been in operation 25 years, and have during this time become established, accepted institutions in that country. Every year hundreds of thousands of people flock to its doors. Its services are extended throughout Europe with travelling exhibitions large and small which take its message to additional millions. Sizable revenues are derived from admission fees to these shows. Certainly, the methods evolved by the museum at Dresden and its branches have worked, and there is no reason why they should not succeed equally well in a country like our own where similar conditions prevail as to literacy, innate curiosity, and an emphasis on obtaining knowledge through sight and the other senses.

England also has recognized the importance of mass health education to national well-being. This very month (October) there begins in that country an ambitious program under the direction of the Ministry of Health, which is designed to secure for the people the fullest possible use of all health and medical facilities. The Central Council of Health Education, which coördinates all health education services, official and voluntary, will assist in this campaign, drawing upon its successful experience in teaching health to the masses through the medium of exhibits.

We have then in America a grand opportunity to capitalize on these experiences of our foreign confreres, adapting the best in their programs to our conditions and our psychology, and making our own contributions to further progress in this field. The United States is noted for its development of mass production and mass distribution in many fields. In the field of life conservation, production of knowledge has outstripped distribution. The warehouses of our knowledge are full to overflowing. The time has come to put this knowledge into the hands of those millions for whom it was produced. We look forward to the next decade, during which time a new piece of machinery for the dissemination of knowledge will be created which we hope will be worthy of the vast sums of money and the patient scientific labors which have been expended in producing this life saving knowledge.

Puerperal Sepsis and Its Prevention

MATERNAL mortality and morbidity, both of which present little evidence of decrease in civilised countries in spite of the improvement in the general health, continue to cause grave concern, not only to obstetricians but also to governments. The principal reaction so far as the latter are concerned has been to institute elaborate statistical enquiries into the causes of death and disablement in childbirth. Many reports on these investigations have now been published comprising, in the aggregate, the statistical study of an enormous number of cases. It must be said, unfortunately, that they have not contributed very much to the solution of the problem. They have merely defined it and its extent but have given little or no indication of how improvement may be obtained.

In the case of puerperal infections, bacteriological research has, however, given somewhat more assistance. We now know that the haemolytic streptococcus is responsible for 39 per cent of the severe cases and for 69 per cent of the deaths which are due to infection. Second in importance are the anaerobic streptococci which are responsible for 29 per cent of the cases and for 8 per cent of the deaths. Third in order of importance are the coliform bacilli responsible primarily for pyelitis and cystitis which comprise about 20 per cent of the pyrexias associated with childbirth and also for a proportion of uterine infections.

There is now an overwhelming body of evidence showing that the haemolytic streptococci causing puerperal infections are of exogenous origin and derived in most instances from the nasopharynx of an attendant at the time of delivery, occasionally from the patient's own nasopharynx and more rarely infection of some kind in the home.

On the other hand, the anaerobic streptococci are probably of endogenous origin derived from organisms present in the vagina before delivery which are introduced into the uterine cavity by intrauterine manipulation during delivery. The coliform infections are almost certainly derived from the bowel. . . . Ronald Hare, M.D. *Canad. Pub. Health J.*, Dec., 1937.

Scarlet Fever Immunization with Formalinized Toxin*

A Preliminary Report

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IMMUNIZATION against scarlet fever through the use of the Dick toxin has found but limited application because of the number of the injections required and the severity of the attendant reactions. If this disease is to be attacked through widespread immunization as was diphtheria there is need for an immunizing agent which can be administered without reactions and which will consequently be as readily accepted by the public as is diphtheria immunization. The early reports of Veldee on the use of formalinized toxin were sufficiently encouraging to warrant a more extensive trial. Veldee reported that over 80 per cent of the susceptible children given 3 injections of this solution were rendered Dick negative when retested 1 month after the last injection. After a preliminary observation of this material as used by Veldee in certain Massachusetts institutions permission was obtained from the Scarlet Fever Committee for its manufacture and use on an experimental basis.

PREPARATION OF FORMALINIZED TOXIN

Toxin is produced by growing the Dochez NY 5 scarlet fever streptococcus in veal infusion broth to which is added 2 per cent dextrose. The growth of the streptococci produces acid from the dextrose, necessitating periodic neutralization with sodium hydroxide. Both the method of adding dextrose and the method of adjusting the reaction of the broth have varied during the study. The potency of the toxin produced has ranged from 150,000 to 200,000 S.T.D. per c.c. The streptococci are removed from the toxin by filtration through paper and Berkefeld filter. The filtrate is incubated at 37½° C. in the presence of 0.4 per cent formalin for approximately 100 days. The fall in residual toxin is followed by means of skin tests on rabbits until a low enough level is reached to permit use of the material. The amount of residual toxin is then accurately determined by skin tests on humans who show positive Dick tests. Each lot has been tested on not less than 12 such individuals; usually more than 12. The residual toxin of lots used in the

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NOTE: This report is of work carried on jointly by the Divisions of Biological Laboratories and Communicable Diseases, the author appearing merely as the spokesman for the department. Credit belongs to the entire staff of the divisions as well as to the health officials of the various communities and institutions in which these studies have been conducted.

study has varied from 500 to 1,500 skin test doses per c.c. The antigen has been given in doses of 0.1 c.c., 0.5 c.c., and 1.0 c.c. at intervals of 3 weeks, the first 2 doses being diluted to 1 c.c. volume for ease of administration.

METHOD OF STUDY

During the winter of 1931–1932 the use of this material was observed in 3 Massachusetts institutions. As it was then apparent that it could be administered safely and without undue reactions, and that through its use a reasonable proportion of susceptibles were rendered Dick negative, the administration of formalinized toxin was made routine in the 3 hospitals for tuberculous children under the auspices of the Massachusetts Department of Public Health. During the winter of 1933–1934 community-wide programs were instituted in Wellesley and East Bridgewater. Similar programs have since been conducted in Bridgewater, Framingham, Gloucester, Greenfield, Rockport, and the towns in the southern Berkshire Health District.

Although no attempt was made to urge parents to have their children tested and given the immunizing agent if found susceptible, the popular acceptance was so great in the communities where it was offered that in some cases more than half of the susceptible school population was given the injections. The high proportion of the child population so immunized may have so influenced the spread of scarlet fever in the community that neither the immunized nor the non-immunized had the usual number of infecting exposures, which would mean that the value of the injections was not being effectively tested. Consequently the later studies in Worcester, Fall River, and Springfield have been planned to reach so small a fraction of the group as to avoid the possibility of interfering with the spread of the disease and thereby reducing the chance of exposure of the immunized children. This selection of a small group for immunization has been accomplished through offering the immunization only in the parochial schools of these cities, leaving the public schools and a portion of each parochial school unprotected. In no community has there been any deliberate selection of children, the injections being given to all children whose parents signed written requests. As these request slips have been distributed to the parents of all children eligible for immunization, the selection has been determined entirely by parental reaction to the request.

In addition to the use of the formalinized toxin as above noted, it has been administered to all the susceptible children in some dozen orphanages and children's schools. Similarly it has replaced the use of the Dick toxin for the immunization of nurses in several training schools. No attempt is made at this time to analyze the results in these groups other than to state that with one or two exceptions the institutions have been free of scarlet fever and the nurses' training schools have been uniformly enthusiastic as to the value of the formalinized toxin and the freedom from reactions.

In order to achieve uniformity of results, and in keeping with the agreement with the Scarlet Fever Committee, all of the testing and immunizing have been conducted under the immediate supervision of the staff of the Massachusetts Department of Public Health. In all of the community-wide programs the Dick tests have been performed and read by members of the staff, except that in Wellesley and Framingham about 100 children were given the test injections by the family physicians but the results read by a member of the department. With few exceptions the tests have all been read by Drs. Feemster, Gilman, and Poutas.

All of the immunizations were given by or in the presence of staff members. A similar procedure was carried on in orphanages, boarding schools, and nurses' training schools. In the 3 state hospitals for tuberculous children and the 3 schools for feebleminded children, the preliminary Dick tests and immunizing injections were given by members of the institutional staff, but all subsequent testing was done by the same group as did the testing in the community studies. There is thus a high degree of uniformity of procedure underlying the data here presented.

In carrying on the Dick tests one or two departures have been made from the procedures recommended by the Dicks. The syringes used were sterilized by being boiled in tap water but thoroughly flushed with test toxin before use. Platinum needles were used and flamed in an alcohol lamp before each use. The high percentage of susceptibles found on the original Dick test in certain communities (over 80 per cent in Wellesley) would indicate that these procedures have not seriously affected the accuracy of the readings of the Dick test. All immunizing injections were given with the Vim-Forsbeck apparatus which had been sterilized by boiling in tap water.

In the early studies the Dick test was performed without the benefit of a control injection. It later became apparent that a certain proportion of those immunized with formalinized toxin had a false positive reaction on retest due to the large amount of protein in the solution. Consequently during the latter portion of the studies all retests have been accompanied by a control test on the opposite arm with a toxin solution autoclaved at 120° C. for 1 hour. No child in whom the control test was a deciding factor in classifying it as Dick negative after injection has subsequently developed scarlet fever. Control injections were also given to a large proportion of the children at the time of the original test before immunization. The number found with a pseudo-reaction before immunization is too small to warrant the routine use of the control test for this group, except perhaps on adults or adolescents.

In determining the attack rate of scarlet fever among the immunized no attempt has been made to check the accuracy of the diagnoses. All cases of scarlet fever reported to the local board of health by physicians have been included in the tabulations. Thus the cases in immunized and non-immunized children are based on the same criteria of diagnosis. In the few cases of scarlet fever in immunized children seen by a representative of the department the findings were such as to warrant reasonable doubt as to the accuracy of the diagnosis. In every such case the diagnosis of scarlet fever was accepted to avoid a possibly biased selection. In several other cases there was also reasonable doubt as to the accuracy of the diagnosis. To have excluded these or to have checked as to accuracy of the diagnosis among the immunized children alone would have rendered the immunized group not comparable with the control.

Exclusive of the institutional and nursing groups, preliminary Dick tests have been given to over 14,000 children, of whom 63 per cent have been found positive. Of those who began the immunizing injections, 8,212 received the complete course of 3 injections.*

In order to calculate the effect of the 3 injections of formalinized toxin in protecting a previously susceptible child against subsequent clinically recognizable scarlet fever, an attempt has

* In addition to the above groups, 7,009 children were tested in Fall River and Springfield late in 1936, and 2,969 given the complete course of 3 injections. These have not been included in the data here reported as they have been in the study only a few months.

been made to calculate risk on the basis of child-months of exposure. Thus an immunized child that has been in the study for 36 months is assumed to have had 36 child-months of exposure. Similarly a child in the same community that was not immunized until 2 years after the beginning of the study is assumed to have had 24 months of exposure as a non-immunized child and 12 months as an immunized. Owing to the variations in risk of scarlet fever at different age levels, all calculations of exposure have been reduced to individual years of life. Thus a child immunized at the age of 5 has a certain number of child-months of exposure as a 5 year old; a year later becomes a 6 year old and has 12 child-months of exposure as such and a year later is calculated as a 7 year old. In each community the calculation dates back to the time when the program began in that particular community. Thus in Wellesley where the work began late in 1933, both immunized and control groups have been observed longer than in a community such as Greenfield where the study did not begin until 1935.

A child has been considered as immunized 3 months after the last injection. During the course of the immunization and the 3 subsequent months it has been carried in the non-immunized group. Similarly an immunized child has been considered as one who has received the 3 injections regardless of the results of the subsequent Dick test; children receiving only 1 or 2 injections have been classified as non-immunized. Thus the data here presented measure the protection that is conferred upon a group of known susceptible children by the 3 injections of formalinized toxin.

In all cases the control group has been calculated on the basis of the difference between the known tested group and the census population at that age. It has been assumed that the same proportion of this residual group is susceptible to scarlet fever as was found in the group tested. That the group tested was a representative sample of the population is shown by comparable measles attack rates among the tested and residual non-tested group. It is realized that this means of estimating the control group is subject to a considerable hazard of errors, but it presented the only available method in view of our obvious inability to test but leave unimmunized a large control group.

IMMUNITY AS MEASURED BY SUBSEQUENT DICK TESTS

All of the children to whom formalinized toxin was administered had been found to be susceptible as determined by a previous Dick test, usually performed the day before the first dose of antigen was given. Subsequent Dick tests thus measure the ability of the solution to render Dick negative a person known to have been previously Dick positive.

The early institutional data of Veldee as observed by us in Massachusetts indicated that over 80 per cent of those injected were rendered Dick negative. Subsequent studies in communities failed to bear out these early institutional findings, nor were the later results in institutions as favorable. The early observations in East Bridgewater and Wellesley were based on retests 2 to 3 months after the last injection. The first retest in Worcester was somewhat variable as to individual schools but averaged about 9 months after the last injection. The remainder, except for Bridgewater, which is discussed below, were performed 10–13 months after the last injection. Data are still lacking as to the most significant time interval at which to make these tests. As will be observed from Table I the retests show that approximately 50 per cent

TABLE I

Immunizing Effect of Formalinized Toxin Measured by Dick Tests

	Tested	*Dick Negative*	*Per cent Negative*
0–4	495	220	44
5–9	2,873	1,455	50
10–14	1,415	805	57
	4,783	2,480	52

All children Dick positive before being given formalinized toxin.

of those injected have been rendered Dick negative. Anything more exact than this generalization would be unwarranted as the variations between communities and within the same community have been too great, ranging from 21 per cent to over 60 per cent. The low figures of Bridgewater (30 per cent) are of special significance as they represent a deliberate attempt to test the immunizing effect of the formalinized toxin in the presence of minimum exposure to streptococci. This community of 10,000 population was selected as it had been free of recognized scarlet fever during the previous winter and thus represented a group in which the incidence of streptococci was supposedly at a minimum. The group was tested and immunization started June 7, 1935; it was retested October 30 of that same year during which time there was no known scarlet fever in the community. Thus the figures are based on observations during the season of minimum scarlet fever in a community with minimum infection. The low percentage of children rendered Dick negative (30 per cent) probably represents as nearly as possible the true immunizing effect of the antigen in the absence of reinforcement from exposure to hemolytic streptococci. It is not clear what may be the other factors in determining the level of protection established in a community.

Retest of a small group of children given a second course of injections after being found Dick positive subsequent to the first series of injections showed that over 90 per cent of these children were rendered Dick negative. The figures are too small to be significant, but raise a reasonable question as to the added protection which might accrue from further injections of formalinized toxin.

PREVENTION OF SCARLET FEVER

The ultimate test of the value of the formalinized toxin depends upon its efficacy in the prevention of scarlet fever. As there is no readily applicable laboratory test upon which one may depend for diagnosis, reliance must be placed solely upon clinical interpretation, even though it is recognized that this is attended with many errors. As the same basis was used for diagnosis of both immunized and non-immunized groups this error is largely eliminated except for the possibility that the local physicians who believed in the value of the antigen might have been reluctant to make a diagnosis of scarlet fever in an immunized child and *vice versa*. Such a possibility can be neither denied nor affirmed though it is our belief that there has been no such weighting of the data in favor of the immunized group.

As an attempt has been made to reduce all observations to the basis of child-months of exposure at the different age limits, all rates have been calculated on the basis of 1,000 child-months of exposure. The small number of cases of scarlet fever that have occurred at each age level in any community introduces rather high variability to the age specific rates. Table II presents a sample of such rates for one community, Greenfield. It is, however, of significance that of a total of 73 possible comparisons in age specific rates that could be made in all the communities included in this study, 62 showed a lower rate among the im-

TABLE II

Scarlet Fever in Greenfield

	Immunized			*Non-Immunized*		
	Child Months Exposure	*Cases Scarlet Fever*	*Rate per 1,000 Child Months*	*Child Months Exposure*	*Cases Scarlet Fever*	*Rate per 1,000 Child Months*
<1	7	0	...	2,351	0	...
1	51	0	...	4,864	1	0.2
2	84	0	...	4,739	1	0.2
3	90	0	...	4,581	6	1.3
4	146	0	...	4,378	3	0.7
5	288	0	...	5,046	4	0.8
6	924	0	...	3,851	8	0.2
7	1,755	3	1.7	2,905	2	0.7
8	2,261	2	0.9	2,584	1	0.4
9	2,233	0	...	2,305	0	...
10	2,179	0	...	2,167	4	0.2
11	2,084	1	0.5	1,875	2	0.5
12	1,863	0	...	1,894	1	0.5
13	1,203	0	...	2,567	0	...
14	415	0	...	2,738	2	0.7

munized group. No comparison has been made if no case occurred in either group. Had there been no immunizing effect from this antigen there would have been approximately only 37 comparisons in which the rates would have been lower in the immunized groups. Some significance can be attached to such a sum of many observations, no one of which is of itself significant.

More valuable data can be obtained from summation of the data of individual communities. In doing so it has seemed fairer to treat the data for Worcester separately as in this community there was a different basis for selection of children to be immunized and the scarlet fever rate throughout the study was markedly in excess of that for the other communities. Were the Worcester data to be listed with the others, the major portion of the control group would have been composed of these Worcester children exposed to greater risk than the remainder, whereas, owing to the limitation of immunization to the parochial schools, the number of immunized children for Worcester would have been but a very small fraction of the total. Thus the control group would have been unduly weighted with children subject to greater exposure and not strictly comparable with the immunized group. Summation of the remaining data has appeared reasonable as the scarlet fever rates in these several communities have not been too dissimilar and the proportion of the total child population immunized has been fairly comparable. All data included have been from the initiation of the studies in the several communities until July 1, 1937.

Table III shows all summarized observations in the grouped communities and the rates in the immunized and non-immunized groups.

Study of the incidence of scarlet fever cases in these communities may also be made through analysis of the hypothesis that the immunization program had no effect upon the incidence of the disease. This, indeed, is the basic hypothesis which should always be factually repudiated before its alternatives merit consideration. If the im-

TABLE III

Summary of Scarlet Fever Attack Rates in All Communities Except Worcester

	Immunized			*Non-Immunized*		
	Child Months Exposure	*Cases Scarlet Fever*	*Rate per 1,000 Child Months*	*Child Months Exposure*	*Cases Scarlet Fever*	*Rate per 1,000 Child Months*
<1	105	0	...	17,227	2	0.1
1	834	0	...	34,933	1	0.03
2	3,381	0	...	32,756	7	0.2
3	4,151	2	0.5	30,368	18	0.6
4	5,598	1	0.2	28,264	19	0.7
5	7,062	7	1.0	27,142	22	0.8
6	11,472	2	0.2	21,284	24	1.1
7	15,066	11	0.7	16,896	9	0.5
8	16,211	6	0.4	14,970	13	0.9
9	15,134	3	0.2	14,926	11	0.7
10	14,905	4	0.3	13,098	14	1.1
11	14,001	3	0.2	12,088	10	0.8
12	11,816	1	0.1	12,358	8	0.6
13	7,658	2	0.3	14,549	5	0.3
14	3,422	1	0.3	15,827	8	0.5

TABLE IV

Scarlet Fever Attack Rates
All Communities Except Worcester

	Total Child Months Exposure	*Total Cases*	*Cases per 1,000 Child Months*	*Child Months Exposure Immunized Children*	*Expected Number Cases in Immunized Children*	*Actual Number Cases in Immunized Children*
<1	17,332	2	0.1	105	...	0
1	35,767	1	0.03	834	...	0
2	35,137	7	0.2	2,381	0.5	0
3	34,519	20	0.6	4,151	2.4	2
4	33,862	20	0.6	5,598	3.3	1
5	34,204	29	0.8	7,062	6.0	7
6	32,756	26	0.8	11,472	9.1	2
7	31,962	20	0.6	15,066	9.4	11
8	31,181	19	0.6	16,211	9.9	6
9	30,060	14	0.5	15,134	7.0	3
10	28,003	18	0.6	14,905	9.6	4
11	26,089	13	0.5	14,001	7.0	3
12	24,174	9	0.4	11,816	4.3	1
13	22,207	7	0.3	7,658	2.4	2
14	19,249	9	0.5	3,422	1.6	1
					71.5	43

TABLE IVA

Summary of Scarlet Fever in
All Communities Except Worcester

Expected Cases in Immunized Group	71.5
Actual Cases	43

TABLE V

Scarlet Fever in Worcester

	Immunized			*Non-Immunized*					
				Parochial Schools			*Public Schools*		
	Child Months Exposure	*Cases Scarlet Fever*	*Rate per 1,000 Child Months*	*Child Months Exposure*	*Cases Scarlet Fever*	*Rate per 1,000 Child Months*	*Child Months Exposure*	*Cases Scarlet Fever*	*Rate per 1,000 Child Months*
<1	0	0	...	....	..	...	.....	...	...
1	11	0	...	....	..	...	.....	...	...
2	61	0	...	....	..	...	.....	...	...
3	122	1	0.1	....	..	...	.....	...	...
4	231	0	...	....	..	...	.....	...	...
5	671	0	...	4,588	16	3.5	38,561	135	3.5
6	1,691	2	1.2	6,419	22	3.4	33,523	142	4.2
7	2,529	1	0.4	9,673	13	1.4	26,546	101	3.9
8	2,651	0	...	6,929	14	2.0	26,094	93	3.6
9	2,573	0	...	5,843	5	0.9	24,267	57	2.3
10	2,312	1	0.4	7,575	9	1.2	20,245	47	2.3
11	2,048	0	...	8,484	6	0.7	26,455	44	1.7
12	2,001	0	...	7,425	0	...	14,634	30	2.1
13	1,708	0	...	5,042	4	0.8	14,931	29	1.9
14	1,100	0	...	814	1	1.2	16,429	22	1.3

TABLE VI

Scarlet Fever Attack Rates in Worcester

	Total Child Months Exposure	*Total Cases*	*Cases per 1,000 Child Months*	*Child Months Exposure Immunized Children*	*Expected Number Cases in Immunized Children*	*Actual Number Cases in Immunized Children*
<1	30,996	7	0.2	0	0.0	0
1	50,866	30	0.6	11	0.0	0
2	48,083	78	1.6	61	0.1	0
3	45,295	109	2.4	122	0.3	1
4	42,547	112	2.6	231	0.6	0
5	43,820	151	3.4	671	2.3	0
6	41,630	166	4.0	1,691	6.7	2
7	38,748	115	3.0	2,529	7.5	1
8	35,674	107	3.0	2,651	8.0	0
9	32,683	62	1.9	2,573	4.9	0
10	30,132	57	1.9	2,312	4.4	1
11	26,987	50	1.9	2,048	3.8	0
12	24,060	30	1.2	2,001	2.5	0
13	21,681	33	1.5	1,708	2.6	0
14	18,343	23	1.3	1,100	1.4	0
					45.1	5
0–14						
5–14					44.1	4

TABLE VII

Scarlet Fever Attack Rates in Worcester Parochial Schools

	Total Child Months Exposure	*Total Cases*	*Cases per 1,000 Child Months*	*Child Months Exposure Immunized Children*	*Expected Number Cases in Immunized Children*	*Actual Number Cases in Immunized Children*
<1 1 2 3 4			No Immunization Program in Preschool Group			
5	5,259	16	3.0	671	2.0	0
6	8,110	24	3.0	1,691	5.0	2
7	12,202	14	1.1	2,529	2.9	1
8	9,580	14	1.5	2,651	3.9	0
9	8,416	5	0.6	2,573	1.5	0
10	9,887	10	1.0	2,312	2.3	1
11	10,532	6	0.6	2,048	1.2	0
12	9,426	0	0.0	2,001	0.0	0
13	6,750	4	0.8	1,708	1.4	0
14	1,914	1	0.5	1,100	0.6	0
					20.8	4

TABLE VIIa

Summary of Scarlet Fever in Worcester

Expected Cases in Immunized Group Based on Rate for Entire City	45.1	0–14 yrs.
Actual Cases	5.	
Expected Cases in Immunized Group Based on Rate for Entire City	44.1	5–14 yrs.
Actual Cases	4.	
Expected Cases in Immunized Group Based on Rate for Parochial Schools	20.8	5–14 yrs.
Actual Cases (same age group)	4.	

munizing program had been without effect on the incidence of scarlet fever in the communities under consideration, then the incidence rate for each age class may be secured from the recorded cases and computed child-months of exposure. These age specific rates may then be applied to the child-months of exposure for the immunized group to compute the expected number of cases in that group assuming no effect of the immunizing program. From Table IV it will be seen that but 43 cases occurred as compared with an expected total of 71. It is thus apparent that although there were failures of immunization, there was a distinct reduction in the incidence of scarlet fever in the immunized group.

The data for Worcester are analyzed separately in Tables V to VII. In this city (190,000 population) the immunized group (parochial school children) may be compared with either the

non-immunized parochial school group or with the public school group. Comparison of attack rates shows significantly lower rates among the immunized than among either control group. By comparing the number of cases that occurred in the immunized group with the expected number of cases as calculated from the total community incidence (Table VI) it will be seen that there were but 5 instead of the expected 45. The comparison between the cases among the immunized and the expected number based on the rate for the entire parochial school system is also significant. Whether or not the lower rate of scarlet fever in the parochial schools be due to less adequate diagnosis or reporting, or to an actual reduction attributable to immunization of about one-third of the susceptibles (see below) is a matter that cannot be answered as yet, though there is evidence to suggest the latter. The comparison with the expected number of cases as determined by the rate in the parochial schools is therefore of greater significance than is the other comparison, as the groups are certainly comparable with respect to diagnosis and reporting. This comparison shows but 4* cases instead of the expected 21 (Table VII).

FAILURES OF IMMUNIZATION

As may be observed from the tables there have been 48 children in the communities studied who have been reported as having scarlet fever at some time after the 3 injections of formalinized toxin. Three of these were children who had been tested after immunization and found to be still Dick positive but received no further injections. Another had been given a second course of antigen, and one developed scarlet fever a few months after an apparently negative test following immunization. The remainder had not been tested between the date of the last injection and the occurrence of the scarlet fever.

Of this latter group it has been possible to retest 10 children some few months after the scarlet fever. Eight of these were found to be still Dick positive. Several explanations may be advanced to explain these findings—infection due to a different strain of streptococci, error of diagnosis, or the existence of a group of individuals incapable of developing antibodies.

DURATION OF IMMUNITY

It is impossible at present to advance any significant data as to the duration of immunity induced by formalinized toxin. The community studies have been carried on for too short a time, and too few of those originally immunized have reappeared for testing to yield data of value. Institutional data, which have not been included in this report show, however, no significant tendency to relapse to a Dick positive reaction.

REACTIONS

Reactions following the administration of the formalinized toxin have been so mild that there has been as hearty acceptance of this immunizing procedure as has been accorded to diphtheria immunization in the same communities. This is especially significant as no attempt has been made to urge its acceptance and no promises made as to its effectiveness. The opinion of the school teachers who have observed its use in the schools has quite uniformly been that it produced no more severe reactions than followed diph-

* Although the Worcester program attempted to reach only the parochial school children, a few younger brothers and sisters of preschool age were brought to the clinics for immunization. One 3 year old immunized child developed scarlet fever. As there was no control group of this age within the parochial schools, this case has been omitted in this comparison though included with that based on the entire city.

TABLE VIII

Febrile Response Following Formalinized Toxin Injections Children in Tuberculosis Hospitals

			Maximum Temperatures Recorded				
	Observations	*Not Over 98.6*	*98.8 to 99.6*	*99.8 to 100.6*	*100.8 to 101.6*	*101.8 to 102.6*	*102.8 Plus*
2nd Day Before Injection	2,254	66%	32%	2.1%	0.4%	0.1%	0.04%
1st Day Before Injection	2,254	64	34	2.1	0.2	0.1	0.1
Day of Injection	2,253	60	35	3.3	1.1	0.3	0.04
1st Day After Injection	2,252	53	39	5.6	1.2	0.6	0.1
2nd Day After Injection	2,250	61	36	2.6	0.6	0.2	0.04

theria toxoid administration. Our personal observations in both institutional and community-wide programs would bear out this opinion except for a somewhat more extensive area of erythema which was, however, devoid of tenderness. Subjective symptoms are rarely encountered.

In order to obtain more objective data as to the reactions following the administration of this antigen, studies have been made of the maximum temperatures observed routinely in tuberculous children at the time of such injection. From Table VIII it will be observed that there was but a slight increase in febrile reactions. Thus of 2,250 observations the number with a normal temperature after injection fell to but 53 per cent as compared with 64 per cent before injection. The percentage with less than 1° rise increased from 33 per cent to 39 per cent, and those with more than 1° rise increased from 2.5 per cent to 7.5 per cent. Thus when we compare the population showing a febrile reaction after immunization with those showing such temperatures during the 2 days preceding the injection (rather than attributing to the antigen all subsequent disturbances) we find that there was barely 10 per cent increase of febrile disturbances which might be attributed to the injection.

Subjective symptoms are more difficult to evaluate. Studies made of school attendance before and after immunization showed no increase in absences even in those groups where as many as 50 per cent of a class were treated. A similar measure of subjective symptoms may be obtained through studies of the percentage of those children who did not complete a course of immunization upon which they had embarked. From Table IX it will be seen that only 11 per cent of those that began the treatments failed to complete the full course. These figures are comparable to those for diphtheria toxoid clinics in Massachusetts in which from 10 to 20 per cent fail to take the complete course of 3 doses. Thus it is apparent that the formalinized toxin produces reactions which are not essentially different in severity from those encountered following the administration of diphtheria toxoid.

TABLE IX

Percentage of Children Completing Immunization

Dick Tested	14,337	
Dick Positive	9,475	
No injections	202	
Started course of injections	9,273	
Three injections	8,212	(89%)
Two injections only	569	(6%)
One injection only	445	(5%)

CONTROL OF SCARLET FEVER

It would be hazardous to venture any claims as to the effect of the community program in controlling scarlet fever. The findings presented below, although suggestive of some such effect, may be accidental observations which would be reversed over a longer period of time. The data are therefore presented merely for the completeness of the record.

Table X shows the scarlet fever morbidity rates in those communities in which such programs were conducted. The year in which the immunization began is marked with an asterisk. It must be remembered, however, that in most instances the work was not initiated until toward the end of the spring and in some cases not until the fall. Thus the rate during the initial year would not be affected by the program. Cities in which the work did not begin until late in 1936 and the southern Berkshire area, data for which have not been included above, are omitted. It will be noted from the table that except in Worcester where less than 3 per cent of the child population was immunized there was a quite uniformly lower rate during the post-immunization years than prior. It should be added, however, that the years 1935 and 1936 were years of low incidence of scarlet fever for the state as a whole, though in certain sections the disease was abnormally prevalent.

A better comparison of the incidence of scarlet fever in the immunized and non-immunized communities may be obtained from a study of groups of communities. Such data are included in Table XI. It will be noted that Natick, which lies directly between Wellesley and Framingham and was not immunized (in spite of repeated requests for this service), experienced an unusually high rate of scarlet fever during the same time that its two adjoining communities were unusually free of the disease. A similar phenomenon is apparent in the comparison of Beverly and Gloucester, each a city of about 25,000 population and separated by about 15 miles. Gloucester was selected for immunization because it seemed apparent it should experience a high incidence due to spread

TABLE X

Scarlet Fever Rates in Immunizing Communities

	Bridgewater	*East Bridgewater* [1]	*Framingham*	*Gloucester*	*Greenfield*	*Rockport* [2]	*Wellesley*	*Worcester* [3]
1925	424	197	662	167	550	102	218	251
1926	107	169	253	89	372	77	197	248
1927	431	168	245	333	729	1,156	564	254
1928	109	112	811	276	260	508	76	172
1929	164	56	875	203	226	54	144	195
1930	144	83	431	474	168	221	242	324
1931	100	250	333	160	193	84	283	525
1932	212	277	247	126	256	602	488	592
1933	308	2,679	405	186	109	87	264*	317
1934	46	1,598*	229*	64	51	29	313	281*
1935	43*	190	122	25*	93*	0*	96	382
1936	32	325	189	57	106	110	193	245

* Immunization program began

[1] Extensive milk-borne outbreak in 1933 with subsequent high community rate due to spread from contact with unrecognized cases

[2] Community too small for rates to be significant

[3] Less than 3 per cent of child population immunized in 1935

TABLE XI

Comparative Scarlet Fever Rates
Selected Communities

	Wellesley	*Framingham*	*Natick†*	*Gloucester*	*Beverly †*	*Greenfield*	*Westfield†*
1925	218	662	263	167	465	550	77
1926	197	253	214	89	215	372	93
1927	564	245	758	333	509	709	164
1928	76	811	390	276	396	260	122
1929	144	875	282	203	235	226	106
1930	242	431	139	474	290	168	248
1931	283	333	196	160	82	193	40
1932	488	247	324	126	237	256	40
1933	264*	405	285	186	530	109	70
1934	313	229*	261	64	382	51	30
1935	96	122	560	25*	119	93*	54
1936	193	189	710	57	230	106	319

* Immunization began
† Not immunized

from Beverly and the adjoining cities of Peabody and Salem where the disease was unusually prevalent. That after immunization of about one-third of the school children the disease should decline rather than increase may have been due either to chance or to some partial immunizing effect. Similar conclusions hold for Westfield and Greenfield. It had been hoped that immunization work might be carried on in Westfield beginning in April, 1935, as the high incidence of the disease in surrounding communities suggested an early increase in Westfield. The work was not undertaken, however, owing to the refusal of the local board of health to permit such a program. Consequently, the program was initiated in Greenfield, some 50 miles north in the Connecticut Valley. The table shows that scarlet fever which was increasing rapidly throughout the valley did invade Westfield as expected but failed to do so in Greenfield. The data for the first half of 1937 show a continued striking difference between these two communities.

DISCUSSION

From the foregoing preliminary data it is apparent that the formalinized toxin used in this study has an appreciable immunizing value as measured both by Dick tests and by protection against clinically recognizable scarlet fever. This immunizing effect is not as great as that due to the use of standard 5 injections of Dick toxin which will render Dick negative about 90–95 per cent of those previously susceptible, as shown by the work of numerous investigators. The clinical data for the use of the two antigens are not strictly comparable. The use of the formalinized toxin is, however, attended with so few reactions that it has been accorded a really popular acceptance in all groups to which it has been offered, even though no attempt has been made to persuade the parents to consent to its use. Subsequent programs in the same communities have shown no loss of popular acceptance.

These considerations raise a serious question as to the possible place which such an antigen might occupy as a means of reducing the incidence of scarlet fever on a community-wide basis. The Dick immunizing toxin has not been accorded the popular acceptance which it deserves when judged solely on the basis of its effectiveness. This lack of acceptance is due basically to

the relative severity of the reactions attendant upon its use, which, during the present era of mild scarlet fever, often appear to the public to be little preferable to the disease itself. Thus the Dick toxin, though giving a satisfactory protection to a very high proportion of those to whom it is administered, has failed to reach a sufficient fraction of the susceptible child population. In our experience the formalinized toxin will reach so large a group that, even though a less powerful antigen, its widespread use will result in the protection of an appreciable fraction of the susceptible group. It is unfortunate that administrative considerations should at times supersede scientific values, but practical experience shows that the community value of an immunizing procedure is no greater than the popular acceptance accorded to it. The history of smallpox vaccination has long offered ample proof of this statement, and the history of Dick toxin immunization has, unfortunately, offered further substantiation of it.

Whether or not the community immunizing value of such a solution is measurably greater than would be suggested by the above data is a point that must await further elucidation. Theoretical considerations lead one to the conclusion that immunization of a reasonable fraction of a susceptible population confers an effective herd immunity upon that community. The studies of Godfrey bear out this theory with respect to diphtheria. Observations are still lacking with respect to scarlet fever but our data have at least suggested a community protection greater than might be expected from the results of the skin tests. Whether or not some of this protection is due to the existence of an effective clinical immunity of a higher level than is shown by tests is a matter which must await further study, though certain data not here included could be advanced in support of such a contention.

It would appear, therefore, that a formalinized toxin solution, though a less powerful antigen than the Dick toxin, might well serve a useful purpose in community-wide programs for the control of scarlet fever. It is far from an ideal antigen but possesses certain advantages which compensate in part for its deficiencies. There is great need for further studies as to improved antigens or improved methods of administration of existing antigens. The studies described above in preliminary form are being continued together with other studies along the lines herein suggested.

CONCLUSIONS

1. Formalinized toxin solution administered as herein described is a less potent immunizing agent than is Dick toxin.

2. About 50 per cent of those susceptibles treated with formalinized toxin are rendered Dick negative, though this figure varies widely in different groups.

3. Control skin tests are essential in the interpretation of Dick tests on persons immunized with formalinized toxin.

4. The incidence of scarlet fever among children given 3 doses of formalinized toxin is substantially lower than in those not so protected.

5. The reactions following the injections were no more severe than those due to diphtheria toxoid.

6. Immunization with formalinized toxin is as readily accepted by the public as is diphtheria immunization.

Result of Active Immunization of Nurses Against Scarlet Fever*

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ACTIVE immunization against scarlet fever with large doses of toxin has been found universally to render a high proportion of persons negative to the Dick test. Occasional attacks of scarlet fever due to heterologous strains may occur in persons negative to tests with the standard toxin. There is apparently a lack of specificity of the hemolytic streptococci causing various clinical forms of infection in humans. Whether the standard toxin will protect immunized persons against most clinical attacks of scarlet fever, and especially whether such immunized persons are protected against infection or only against the toxin, can be determined only by collected experiences under actual conditions of exposure.

The present report is based on observations of the nurses in the South Department, Boston City Hospital for the past 24 years.

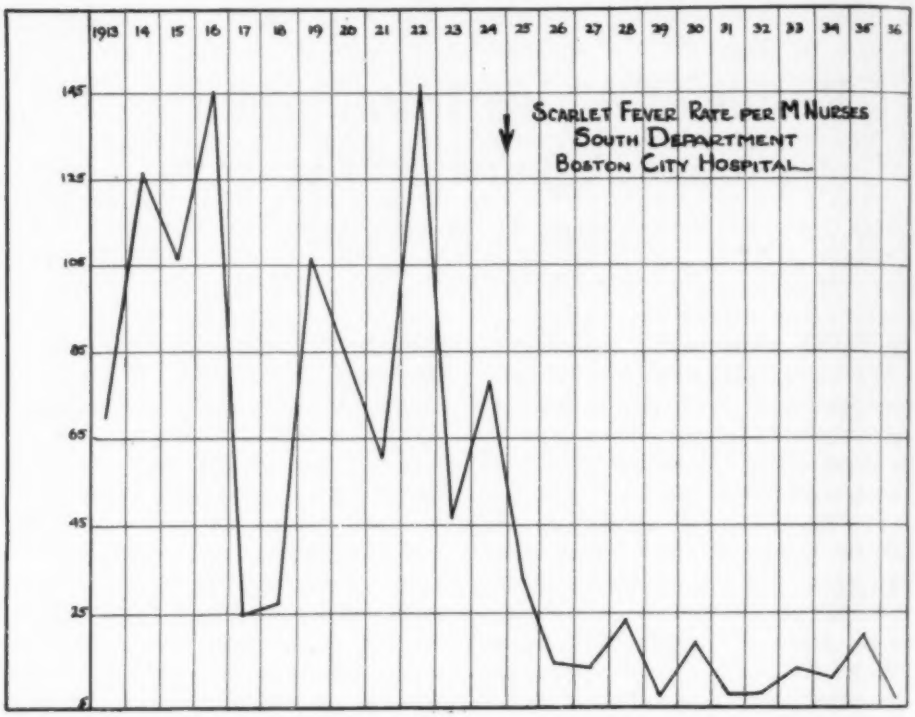
A small group of nurses was immunized by Branch and Edwards early in 1924. Since 1925, the majority of the nurses have been immunized actively against scarlet fever. The Boston City Hospital nurses have been immunized chiefly in the probationary period by the standard method in the Department of Immunology and are assigned to the scarlet fever wards within 1 to 2 years. Sixty-five per cent of the nurses come from other training schools in Maine, New Hampshire, Vermont, and Massachusetts. Immunizing practice has not been universally good or standard throughout this time in some of these schools.

For the 12 years, 1913–1924, of 1,009 nurses in training 87, or 8.6 per cent, developed scarlet fever. In the following 12 years, 1925–1936, of 1,446 nurses serving in the wards, 20, or 1.3 per cent, contracted scarlet fever, a reduction to 15 per cent of the former rate. Of these 20 nurses, 13 had not been immunized, 3 had had only 500–875 units of toxin, 4½ years, 1 year, and 10 days, respectively, before scarlet fever onset, 1 had received Lilly's Antigen (Larsen) 8 months before scarlet fever, and only 3 had received the complete series of toxin injections. If the completely immunized only were considered in this group the incidence would be 0.21 per cent, a reduction to 0.24 per cent of the former rate.

Of the 3 immunized nurses who developed scarlet fever, 1 never became negative after two series of injections, and the other 2 were not tested after immunization. Two of the 3 had positive Dick tests, 1 before and 1 at the onset of scarlet fever, and 1 was not tested. Only 3 of the 20 cases of scarlet fever were in the Boston City Hospital training school, 2 of which had been immunized with small doses

* Read before the Epidemiology Section of the American Public Health Association at the Sixty-sixth Annual Meeting in New York, N. Y., October 6, 1937.

CHART I—Scarlet fever incidence in South Department, Boston City Hospital, nurses per 1,000



and 1 had had a previously negative Dick test a few months before scarlet fever.

Of the 13 non-immunized nurses who developed scarlet fever in the second period, 5 had never been Dick tested, 3 of whom were positive just before or at the attack and 2 negative early in the attack. Three of the 13 had had positive tests but had not been immunized. In 1 the result of the test was not obtainable and 4 had been negative. Of these 4 negative, 2 had positive Dick tests at the South Department and 2 were not tested here. One was reported negative although the nurse noted redness the size of a dime 10 hours later which had faded in 24 hours.

This drop from 8.6 per cent to 1.3 per cent in incidence was not associated with a corresponding decrease of scarlet fever in nurses in general in this region. One hundred twenty-seven nurses were admitted with scarlet fever in 1913–1924 from hospitals having no contagious services, and in the next 12 years 100 nurses were admitted. Immunization in the hospitals supplying these patients either had not been generally done or had been done only during the last 3–4 years. Forty nurses were admitted from the Boston City Hospital (Proper) in the first (non-immunization) period and 35 in the second period.

The degree of exposure of the nurses in hospital service is subject to great variation and cannot be accurately estimated. The total number of scarlet fever admissions to the hospital and the incidence of scarlet fever in Boston during these 24 years has actually been higher during the period of immunization (Chart I).

In 1922, the training course was re-

duced from 6 months to 3 months. The average time of assignment to the scarlet fever wards in the first period was 41.5 days and in the second period 31.3 days. The difference is actually less significant than this. For example, in the first period 28 per cent of the nurses were assigned to scarlet fever wards for 50 days or more for a total of 50 per cent of the whole nursing time. In the second period, there was much less variation, as only 1.3 per cent served in the scarlet fever wards for 50 days or more for a total of 2 per cent of the whole nursing time of this period. Also, since 1922, nursing contact with scarlet fever occurs more or less constantly on the isolation wards in addition to scarlet fever wards. An analysis of these conditions fails to indicate any significant factor for the reduction in scarlet fever other than the toxin immunization.

But is the disease occurring unrecognized because of the abolishment of the rash? This is not so easily determined. In the 12 years before immunization, admissions of nurses with streptococcal infections other than scarlet fever occurred in 65, or 6.4 per cent, and since immunization in 67, or 4.6 per cent.

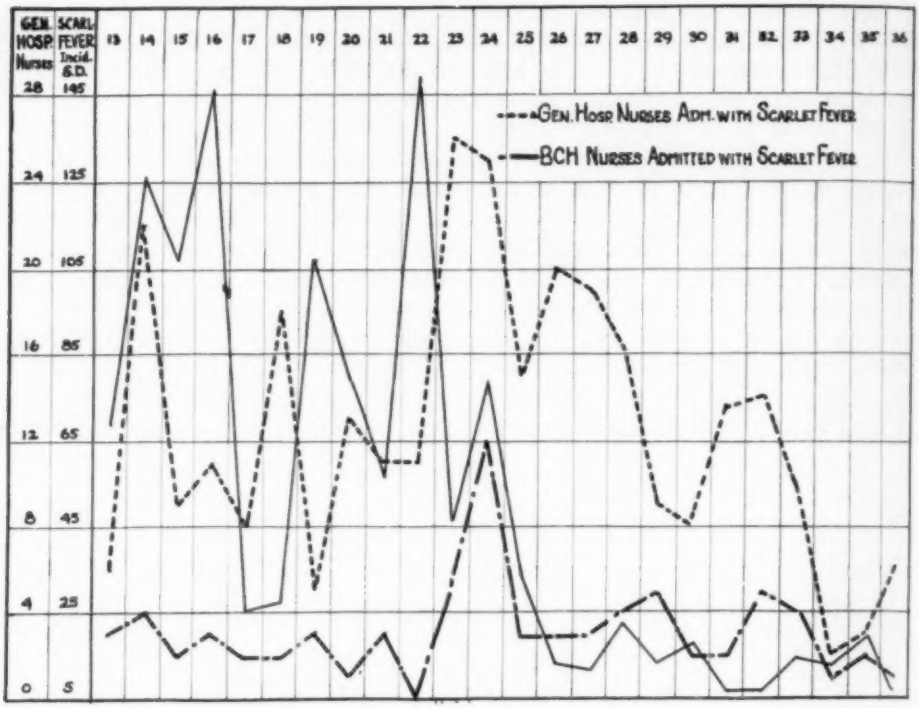
The total loss of time due to all illnesses during the first period was 11.3 days average for each nurse and during

TABLE I

Nurses Contracting Scarlet Fever in South Department, Boston City Hospital, 1913–1936

	Nurses	*Nurses Ill Sc. Fev.*	*Rate per M.*	*Cases of Sc. Fev. Adm.*	*Sc. Fev. Morbidity, Boston, per 100,000*
1913	71	5	70	801	262.25
1914	63	8	127	846	480
1915	65	7	109	1,080	400.57
1916	94	14	145	574	236.7
1917	78	2	25	531	200.5
1918	69	2	28	391	150.7
1919	122	13	106	693	290.6
1920	98	8	81	576	287.6
1921	101	6	59	693	265.7
1922	75	11	145.6	668	237.3
1923	84	4	47	933	423.1
1924	89	7	78.6	927	504.4
Total	1,009	87	86.2		
1925	87	3	34	708	375.3
1926	75	1	13	783	398.6
1927	84	1	11.9	1,049	532.3
1928	82	2	24.3	763	338
1929	142	1	7	665	353
1930	116	2	17.2	724	336.6
1931	131	1	8.2	903	453.9
1932	121	1	8.2	1,311	624.6
1933	152	2	13.1	1,011	366.3
1934	167	2	11.9	615	235.4
1935	148	3	20.2	543	232.8
1936	141	1	7	762	304.4
Total	1,446	20	13.8		

CHART II—Nurses from general hospitals admitted with scarlet fever compared with incidence in nurses in contagious hospital


GEN. HOSP. Nurses
SCARL. FEVER Incid. B.D.
13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36
28 145
24 125
20 105
16 85
12 65
8 45
4 25
0 5
Gen. Hosp Nurses Adm. with Scarlet Fever
BCH Nurses Admitted with Scarlet Fever

the second period 4.8 days. Diphtheria immunization, begun in 1918, accounts for some of this reduction, but comparing 1920–1924 and 1925–1929, shows an average of 7.3 days illness per nurse in the former to 4.2 days for the latter period.

Prevalence of scarlet fever in nurses in the probationary period, before immunization has became fully effective, has shown no increase through contact with nurses who have served in the scarlet fever wards; and the occurrence of scarlet fever in the pediatric wards and in the diphtheria, measles, and whooping cough wards has decreased since immunization.

It is difficult to estimate the number of nurses contracting scarlet fever recognized only because of the rash, who would not even report illness if the rash were not present. From a series of cases it does not seem probable that it would be as high as 10 per cent.

RÉSUMÉ

The incidence of scarlet fever in nurses in contact with scarlet fever in the South Department, Boston City Hospital, was 86.2 per 1,000 before immunization and 13.8 per 1,000 after immunization comparing 12 year periods. Only 3 of the 20 nurses developing scarlet fever since immunization had had the complete series of immunizing injections. Two of these had not been retested after immunization and one had remained positive after 2 series of injections.

One hundred and twenty-seven nurses were admitted in the first period (1913–1924) with scarlet fever from hospitals not supposed to accept scarlet fever, and 100 such nurses were ad-

TABLE II

Detail Data of Nurses Ill With Scarlet Fever Since Immunization Was Begun

Case	Contag. Service Began	Sc. Fever Ward Assign.	Onset of Sc. Fever	Days After Begin. of Contag. Serv.	Days After Sc. Fever Ward Assign.	Immunized	Prev. Dick
1 A	12- 1-24	2-21-25	1-18-25	49	..	0	..
2 A	1-14-25	2-25-25	3- 8-25	54	12	0	..
3	4-19-25	6-16-25	5-17-25	29	..	875 units 4-17-24	+ 0
4 A	1-14-26	1-21-26	2-11-26	29	22	500 units 2- 1-26	+
5 A	9- 2-27	9- 2-27 to 9-20-27 10-18-27	11- 3-27	63	16	Lilly Antigen 4- 4-27	+
6	2- 5-28	2- 5-28 to 2- 9-28 4- 1-28	4-16-28	71	16	500 units 1925	+
7 A	7- 2-28	7- 2-28 to 7- 3-28 8-11-28	8-19-28	48	5	0	+
8 A	5- 8-29	6-26-29 to 7- 9-29	7-13-29	67	18	0	+
9 A	2- 1-30	3-21-30	2-19-30	19	..	0	+
10 A	10- 1-30	10- 1-30	10-12-30	12	12	0	0
11 A	3-15-31	4-26-31	3-21-31	7	..	+ 1929	+
12 A	11-30-31	1- 2-32	1-22-32	54	21	0	?
13 A	10-14-33	10-27-33	11-13-33	32	18	0	—
14	11- 1-33	11- 1-33	12- 1-33	31	31	0	0
15 A	4-15-34	5-13-34	5-19-34	29	7	0	0
16 A	11- 1-34	11- 1-34 11-30-34 12-23-34	12-26-34	56	4 56	+ 9 mos.	+
17 A	12-30-34	12-30-34	1- 6-35	8	8	0	..
18 A	4- 1-35	4- 1-35	4- 7-35	7	7	Twice 1933	+
19 A	4- 5-35	4- 5-35	4-26-35	22	22	0	0
20 A	2-26-36	3-14-36	4- 8-36	43	26	0	..

A = Nurses from affiliated schools

mitted 1925–1936. In recent years many of these hospitals have begun immunization.

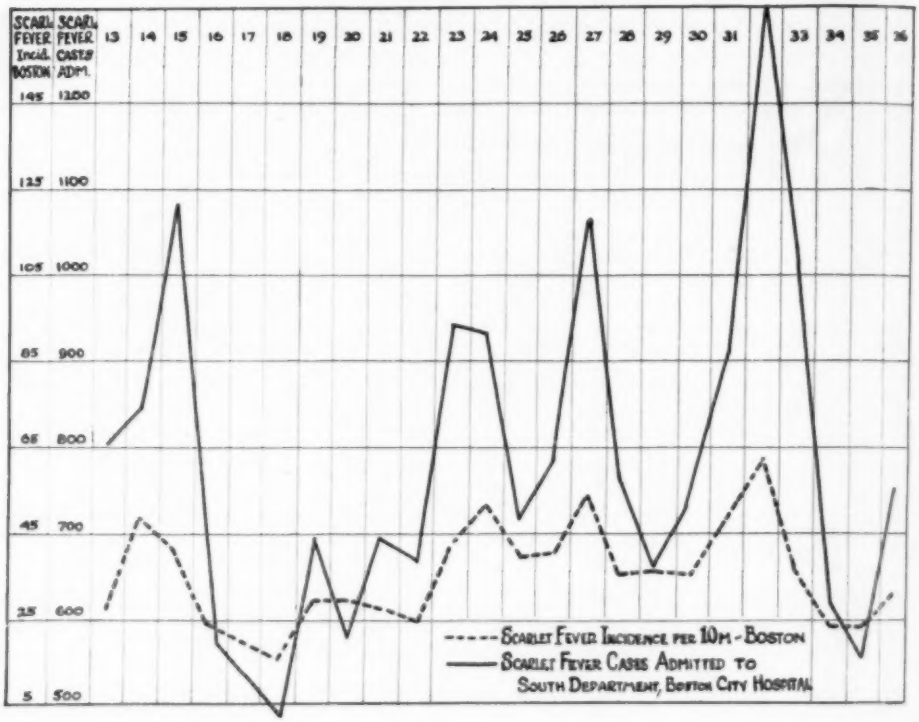
The conditions of contact of nurses with scarlet fever are obviously greatly variable but no significant difference could be made out to account for the striking reduction of prevalence.

The incidence of streptococcal infections such as tonsillitis, septic sore throat, erysipelas, and peritonsillitis (aside from scarlet fever) was 64.4 per 1,000 in the first period, and 46.6 in the period of immunization.

The total loss of time from all illnesses was 11.3 days average in the first period and 4.8 days in the second.

The prevalence of scarlet fever in the children in the pediatric, measles, whooping cough, and diphtheria wards

CHART III—Cases of scarlet fever admitted to South Department, Boston City Hospital, and scarlet fever incidence per 10,000 in Boston


SCARL. FEVER Incid. BOSTON
SCARL. FEVER CASES ADM.
13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 33 34 35 36
145 1200
125 1100
105 1000
85 900
65 800
45 700
25 600
5 500
Scarlet Fever Incidence per 10m - Boston
Scarlet Fever Cases Admitted to South Department, Boston City Hospital

has shown no increase since immunization of nurses.

CONCLUSION

Toxin immunization of nurses carefully done largely abolishes the evidence of scarlet fever during their contagious disease training. There is no evidence that the disease is still occurring in unrecognized form.

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Sanitary Aspects of Air Conditioning*

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THIS paper summarizes the comfort, health, and therapeutic aspects of air conditioning in the light of present knowledge and current research.

In the evaluation of these aspects, it is desirable to distinguish between winter and summer air conditioning, since the requirements and the effects of air conditions differ considerably in the two seasons. According to engineering terminology, the functions of winter air conditioning are heating, humidification, air circulation, and filtration; those of summer air conditioning are cooling, dehumidification, circulation, and filtration. These definitions are purely arbitrary in that they do not distinguish between important and unimportant functions.

WINTER AIR CONDITIONING

From the standpoint of comfort and health the problem of winter air conditioning appears to be mainly one of rational heating supplemented with adequate building insulation and with sufficient ventilation, by natural or mechanical means, to remove objectionable body or tobacco smoke odors.

Air and Wall Temperatures—Air temperature and particularly sharp temperature changes are as a rule the most important factors. While a moderate variability of temperature toward the cooler side of the comfort zone is stimulating and probably beneficial, there is much good evidence to show that great temperature changes may have a deleterious influence by increasing susceptibility to upper respiratory diseases. A most difficult problem in winter air conditioning is how to reduce the sudden temperature changes experienced in passing from a warm room to cold outdoor air. Obviously, this is difficult to accomplish with conventional methods and equipment. Some persons believe that the solution of the problem might be found in radiant methods of heating, but so far nothing practical has been achieved.

Next to air temperature, the temperature of the exposed walls and glass is of considerable importance. A room heated by the usual convectional methods may be uncomfortably cool at 75° or even at 80° in cold weather if the insulation of the walls is poor. Owing to a steep temperature gradient between floor and ceiling, the feet are cold and the head is too warm, a condition that is inimical to comfort and health.

Years of experience in England have shown that a combination of warm walls and relatively cool air is distinctly more comfortable and pleasant than one of cold walls and warm air; such an arrangement also reduces to some extent the temperature contrasts between

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outdoors and indoors. Radiant panel heating methods have distinct advantages in these respects, but their applicability to cold climates involves a number of economic and engineering difficulties that have yet to be overcome. Work now in progress at the John B. Pierce Laboratory of Hygiene, under the direction of Dr. Winslow, may shed considerable light on disputed points.

Suitable wall insulation, in conjunction with convectional heating methods, will materially improve the comfort of a room by reducing infiltration and by keeping the inside surface temperature of the exposed walls close to the air temperature. Such a room would be comfortable at temperatures between 70° and 73° instead of 75° and 80°, in poorly constructed buildings.

Aside from comfort, insulation has important economic aspects. It allows a reduction in the size of the entire heating plant and effects a substantial saving in fuel consumption by reducing structural heat losses and by permitting a lower room temperature.

Humidity — This factor, although very important in warm weather, is of little consequence in cold weather except in special instances. The usual variations of humidity during the heating season have been found to produce little effect on comfort, and from the standpoint of health the evidence is overwhelmingly on the negative side. Subjectively, a low humidity is generally preferred to a high one, especially when the latter is obtained by mechanical methods. Exceptions have been found in persons suffering from frontal sinusitis and other infections of the upper respiratory tract characterized by excessive dryness of the nose. The same subjects, however, disliked the humid air after their condition improved.[1] A low humidity also seems more agreeable than a high one in catarrhal conditions of the nose[2] but the data are too meager to allow a definite conclusion. In the light of these suggestive data, a study of the effects of dry and humid atmospheres on upper respiratory disorders may offer a fruitful field for research.

In properly heated buildings, the natural relative humidity seldom falls below 20 per cent owing to a stabilizing influence of hygroscopic materials in the walls, furniture, etc. Artificial humidification may lead to serious trouble from condensation and freezing of the moisture inside certain building materials composing the outside walls. Even in buildings constructed of waterproof materials, relative humidities above 40 per cent are troublesome in cold weather.

Air Movement and Drafts—Within the usual limits, air movement is not a factor of great importance. The aim in ordinary ventilation work is to keep the movement of air at or slightly above the threshold of perceptibility so as to impart a sense of freshness without drafts. Usual practical values are between 15 and 50 f.p.m. during the heating season.

The problem of drafts is difficult to solve to the satisfaction of all because the trouble does not always arise from faulty air conditions but often from an inherent instability of the heat-regulating system of the body, particularly from poor blood circulation to the extremities and deficient vasomotor response in certain individuals. The draft-susceptibles may suffer considerably on exposure to ordinary air conditions that are perfectly satisfactory to the majority of normal persons. Even a temperature of 72° with an air movement of 20 f.p.m. may prove objectionable to some persons who like heat and cannot stand the cold, because of their low metabolic rate. Such individual idiosyncrasies may be counteracted by the use of suitable clothing that will keep the extremities warm.

Few persons, however, would be willing to depart from custom and fashion unless their health is seriously threatened.

Mechanical Ventilation and Air Cleaning—These two factors are very important in theatres, auditoriums, industrial plants, etc., where large volumes of air must be constantly supplied, but in the average home and uncrowded office natural ventilation is sufficient for every practical need, except in the kitchen and bathroom where separate means of ventilation are desirable in order to prevent diffusion of odors to other sections of the building.

According to prevailing belief, the minimum fresh air supply in general ventilation work is that needed to dilute and remove unpleasant body or other odors that have hygienic significance. In experimental work the amount of outside air needed for the removal of body odors was found to vary from 5 to 38 c.f.m. per person, depending largely on the cleanliness of the occupants, the air space per person, and the type of air-conditioning apparatus.[3] Under ordinary conditions, a fresh air supply of about 15 c.f.m. per person appears to be quite satisfactory in public buildings when each occupant is allowed an air space of about 200 c.f.m. This quantity is usually sufficient to satisfy the thermal requirements, except in warm weather when the air is not cooled artificially. In all instances, the total air supply, including outside air and recirculated air, must be sufficient to maintain comfortable thermal conditions and to prevent the accumulation of objectionable odors.

In industries where the primary object may be the control of toxic dusts, fumes, or gases, the air supply must be sufficient to dilute the polluting elements to a concentration below the physiological threshold.

So far as ordinary atmospheric dust is concerned, the objection is believed to be not so much a matter of health as of nuisance and esthetics.[4]

Health and Economic Aspects of Winter Air Conditioning—In the past few years, several studies have been carried out to determine whether winter air conditioning affects favorably the health and efficiency of office workers. The best controlled studies were those of McConnell[5] at the Metropolitan Life Insurance Company, including a total of 10,000 employees, half working in conditioned offices and the other half in offices not equipped with air-conditioning equipment but otherwise properly heated and ventilated. Records of illness, absenteeism, and other pertinent factors showed no significant difference between the two.

Reports from commercial sources are quite contradictory. Claims are often made of definite benefits to health and efficiency, but the data are too meager and without controls. Such data are probably of little value owing to the well known variability in the incidence of upper respiratory diseases from year to year and month to month.

We must admit at the outset that the evaluation of any specific influence on health is extremely difficult, because of lack of suitable standards and the simultaneous operation of many extraneous factors outside the place of work, some of which have probably a much more powerful influence than the air conditions at work. All we can say at present is that no authentic evidence exists to prove any superiority of winter air conditioning over rational heating in homes and public buildings.

SUMMER AIR CONDITIONING

Cooling in warm weather may contribute much to the comfort or discomfort of man depending upon the method and extent of cooling. Much has yet to be learned about this important branch of air conditioning. Above all, temperature contrasts must not be too

great. An indoor temperature even 10 to 15° F. below the outside temperature, as is now the practice in warm weather, appears to be objectionable and harmful to some persons. We often hear of head colds originating in overcooled theatres, restaurants, or railroad cars on warm summer days. Headaches, stomach upsets, and a general feeling of fatigue are other conditions attributed to overcooling. Although many healthy individuals seem to be perfectly capable of adjusting themselves to such temperature changes, without discomfort or after-effects, little is known about possible damage to health that may result from too frequent exposure.

Adaptation to summer heat renders the organism sensitive to cold and temperature changes, especially when the body surfaces are wet with perspiration. The tone of the heat producing organs is depressed and the metabolic rate may fail to increase sufficiently, or quickly enough, on exposure to sudden chilling.[6] The "cold shock" experienced on entering a cooled space on a warm day is found to be due to an excessive increase in the heat loss by evaporation of perspiration without an immediate compensatory increase in the metabolic rate.[7] Conversely, the feeling of depression and discomfort experienced in passing from a cooled space to warm outdoor air appears to be due to a lag in sweat-gland activity and the consequent retention of body heat.

The solution of the problem would seem to lie in dehydrating the air to a comparatively low humidity, without reducing the temperature more than a few degrees below the prevailing outdoor temperature. In this way, temperature contrasts are moderated upon entering and leaving the conditioned space and, according to current research, there are no untoward symptoms in the transitional period of readjustment.

Health and Economic Aspects of Summer Air Conditioning—The benefits of summer cooling in commercial and industrial fields are now generally appreciated. There is much good evidence to show that cooling under adverse conditions of heavy physical work and heat should prove beneficial to both employer and employee by increasing the output, decreasing illness and accidents, and lessening fatigue.[8] In office work, however, where the physical activity is light, McConnell[9] was unable to detect any significant improvement in the health or efficiency of approximately 6,000 employees of the Metropolitan Life Insurance Company in the course of a summer season, despite the conspicuous improvement in comfort. The employees were able to pursue their work without the depression and discomfort experienced prior to the installation of cooling apparatus.

For the average home and small office, cooling may be a potential necessity, but for the time being, it is still too expensive for general use. In many sections of the country where the nights are usually cool, suitable building insulation, including the use of awnings, and the circulation of cool night air will generally afford sufficient relief during the heat of the day.

THERAPEUTIC ASPECTS OF AIR CONDITIONING

Aside from comfort and health, air conditioning is proving to be a valuable adjunct in the treatment of disease.[10] In operating rooms, conditioned air is gradually becoming indispensable in reducing the risk of explosion of anesthetic gases and safeguarding the patient, surgeon, and operating team against excessive summer heat.

In premature nurseries of institutions, the maintenance of a suitable temperature, according to individual requirements, with a relative humidity

of about 65 per cent, as determined by extensive research, results in a great reduction in the incidence of respiratory and gastrointestinal diseases, and improvement in the infants' chances for life.

In the artificial production of therapeutic fever, conditioned air is proving to be the preferred method of treatment. In oxygen therapy, air conditioning is concerned with the conservation of oxygen, and the removal of excess carbon dioxide, heat, and moisture.

Hay fevers and pollen asthma offer a wide field for application of air conditioning in the home, office, or clinic, the main objective being adequate filtration of air. Unlike specific desensitization, treatment by conditioned air is not curative but gives only temporary relief. With rare exceptions, the symptoms recur on exposure to pollen-laden air.

Cooling in warm weather is of great assistance in the treatment of pyrexias of the new-born, in enteric disorders, fevers, heat stroke, heart failure, and a variety of other ailments that often accompany summer heat waves. Considerable research is now in progress on a wide variety of diseases in which air conditioning may prove of value.

Of particular significance to operating rooms and contagious wards is the recent use of ultra-violet light for sterilizing air. This phase of air conditioning will be separately discussed by Mr. Wells [11] and need not, therefore, be taken up here.

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Standard Agar Counts as Compared With Counts on Improved Agars at 32° C.*†

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THE American Public Health Association has under consideration an improved plating medium and an improved incubation temperature for official use in the bacteriological examination of dairy products. The improved agar which has received most study is a tryptone-glucose-skim milk medium, developed by Bowers and Hucker [1] in 1935. This medium contains 0.5 per cent tryptone (hydrolyzed casein), 0.1 per cent glucose, 0.5 per cent skim milk and 1.5 per cent agar.

At the request of the Committee on Standard Methods for the Examination of Dairy and Food Products, Difco Laboratories, Inc., prepared dehydrated media according to the above formula both with and without milk, and sent trial packages of one or both to 91 laboratories for comparisons with standard nutrient agar. The types of laboratories receiving tryptone media were as follows: milk or ice cream companies, 39; commercial, 5; health and control, 24; and educational institutions, 23. Seven were in foreign countries (England, Denmark, Germany, Syria, Cuba, and Hawaii).

Dr. R. S. Breed, Chairman of the Standard Methods Committee, asked the author to summarize the data. This summary (Table I) includes 42 reports by 56 laboratories on 23,715 samples of dairy products.

The majority of the laboratories received a tryptone-glucose medium and added 5 ml. of good quality skim milk per liter prior to sterilization. A few laboratories failed to add the milk, but since several studies have shown only a slight increase in count due to the addition of this amount of milk, no distinction is made in Table I between tryptone-glucose and tryptone-glucose-skim milk agar.

Only 14 of the 42 reports have previously been published.[1-14] Of the 28 unpublished reports, 15 were from health or other control laboratories, 7 from laboratories in educational institutions, and 6 from industrial or commercial laboratories. About 50 per cent of the work was done using incubation temperatures of both 37° C. and 32° C. for 48 hours, the latter being one of the improved incubation temperatures under consideration for official use in the examination of dairy products. Some laboratories did not use the lower temperature because 32° C. incubators were not available.

It is not within the scope of this paper to discuss still other modifications used by 15 of the laboratories as indi-

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† Approved by the Director of the New York State Agricultural Experiment Station for publication as *Journal Paper No. 246*, Jan. 8, 1938.

TABLE I

List of 42 Reports from 56 Laboratories Classifying 23,715 Samples of Dairy Products Examined in a Comparison of Standard Agar and Tryptone-Glucose-Skim Milk (Original Formula) Agar Plate Counts with 32° C. and 37° C. Incubation

	Number of Samples Examined							Modifications Studied				
	Milk			Cream				S. A.		T. G. M.		
Report by	Raw	Past.	Powd.	Raw	Past.	Ice Cream	Misc.	37°	32°	37°	32°	Others
A. Published Reports												
Bowers and Hucker (Geneva)[1]	365	341	...	...	...	...	...	+		+		+
McCrady and Archambault (Montreal)[2]	40	45	...	...	...	...	...	+		+		+
Safford and Stark (Ithaca)[3]	19	190	...	...	...	...	...	+		+		+
Demeter and Löweneck (Germany)[4]	28	14	...	...	...	...	...		+		+	
Bradfield (Burlington)[5]	684	71	...	...	...	...	47	+	+	+	+	
Frayer (Burlington)[6]	18	...	...	...	...	...	...	+			+	
Dennis and Weiser (Columbus)[7]	37	...	...	...	...	...	...	+	+	+	+	+
Phelan (Boston)[8]	617	903	...	198	123	21	60	+	+	+	+	
Kelly (Washington)[9]	1,164	1,937	...	...	1,147	...	...	+	+	+	+	
Curtis and Hileman (Syracuse)[10]	...	...	254	...	...	...	...	+	+	+	+	
Babel (Lafayette)[11]	...	...	...	...	...	192	...	+		+		+
Robertson (Albany)[12]	...	...	...	...	...	412	...	+	+	+	+	
Yale and Hickey (Geneva)[13]	...	...	...	...	...	112	...	+			+	
Yale and Pederson (Geneva)[14]	11	22	...	...	...	...	...	+	+	+	+	+
Total	2,983	3,523	254	198	1,270	737	107					
B. Unpublished Reports from Health and Other Control Officials												
Mickle * (Hartford)	4	4	...	...	...	...	...	+		+		
Reynolds (Washington)	...	91	...	...	...	...	...	+		+		
Eglinton (Geneva)	136	134	...	...	153	...	...	+	+	+	+	+
Stone (Los Angeles)	248	63	...	...	...	...	...	+		+		+
White (Chicago)	118	107	...	14	64	...	...	+		+	+	
Krog (Plainfield, N. J.)	13	23	...	...	...	...	...	+	+	+	+	
Parker (Jacksonville)	415	356	...	46	122	...	...	+		+		+
Perry (Baltimore)	156	64	...	...	...	...	...	+		+		+
Zevin (Tupper Lake, N. Y.)	10	30	...	...	10	...	...	+		+		
Mott (Boston)	...	4,796	...	...	...	...	...	+	+	+	+	
Hatfield (New York City)	63	55	...	...	50	...	...	+	+	+	+	
Hohl (Albany)	47	141	...	...	9	...	...	+			+	+
Milone (Albany)	8	24	...	...	8	...	48	+		+		
Hood (Ottawa)	...	...	...	...	...	81	...	+		+		
Slack (London, Ont.)	100	100	...	...	...	...	...	+		+		
Total	1,318	5,988	...	60	416	81	48					
C. Unpublished Reports from Workers in Educational Institutions												
Shutt (Guelph, Ont.)	159	20	...	...	...	...	...	+	+	+	+	
Hitchner (Orono)	24	...	...	...	...	...	...	+		+		
Foltz (Manhattan)	...	...	...	...	...	279	...	+	+	+	+	
Hammer (Ames)	37	36	...	...	...	...	...					
Prucha (Urbana)	236	671	...	...	...	...	...	+		+		+
Johns (Ottawa)	...	45	...	...	...	...	...		+		+	
Brown (Baltimore)	45	...	...	...	...	...	...	+		+		+
Yale (Geneva)	4,699	...	...	...	...	...	...	+			+	
Total	5,200	772	...	...	...	279	...					
D. Unpublished Reports from the Industry and from Commercial Laboratories												
Sias (Brookline, Mass.)	15	...	...	...	...	...	...	+	+	+	+	
Hardenbergh (Plainsboro, N. J.)	280	30	...	...	...	...	...	+		+		
Charlton (Portland, Ore.)	41	...	...	...	...	...	...	+		+		
Difco (Detroit, Mich.)	...	58	...	...	35	...	...	+	+	+	+	+
Sealtest (Baltimore)	22	...	...	...	...	...	...	+	+	+	+	+
Total	358	88	...	...	35	...	...					
Grand Total	9,859	10,371	254	258	1,721	1,097	155					

* Comparisons by 9 laboratories

cated in the right hand column of Table I. Safford and Stark,[3] Eglinton, Stone, Perry, Hohl, Brown, and Difco Laboratories tried several improved agars which yielded on the average higher counts than the tryptone agar described in this paper. Some of these modifications show possibilities of an even greater improvement over standard agar than does the formula used in the present research work and merit further consideration.

RESULTS OBTAINED

On the tryptone medium, colonies were larger than on standard agar and easier to count both because of their size and because of the opaqueness of the medium due to the added milk.[1, 2, 4, 5, 6, 7]

Frayer,[6] in a study of about 4,000 plate counts made by several technicians on 18 samples, found that counts on replicate tryptone agar plates incubated at 32° C. were less variable than counts on replicate standard agar plates incubated at 37° C.

This is an important point in favor of the modified method since its use would result in greater uniformity in results obtained by different laboratories. The increased accuracy of counting is presumably due to the greater ease with which colonies can be counted on the tryptone medium.

Bowers and Hucker[1] found that mastitis streptococci grew better on the tryptone medium than on standard agar where they grew either as "pinpoint" colonies or not at all. Other studies have shown that these organisms grow equally well at 32° and 37° C.

Yale and Pederson[14] reported that thermophilic bacteria, occasionally present in large numbers in pasteurized milk, do not grow well at either 32° or 37° C. and that a higher incubation temperature than 37° C. is necessary for their best development on agar plates.

Bradfield[5] discovered that certain types of contamination had a definite relationship to increases in counts developed by modified plating methods. Organisms arising chiefly in the udder responded to the standard agar and 37° C. incubation temperature almost as well as to the modified methods. Types carried into the milk by utensils developed better at the lower incubation temperature and with the modified medium than with the standard procedure. Those derived from feed, bedding, or stable dust developed better at the lower temperature than at 37° C., but there was no advantage for either the modified medium or temperature when the source of contamination was fecal or dermal. Types predominating in improperly cooled milk developed greatly increased counts on the modified medium, particularly when incubated at 32° C.

If it is desirable to use a procedure which will grow bacteria associated with unclean utensils and inadequate cooling, a modified medium and temperature are clearly advantageous.

EFFECT OF MODIFIED METHODS ON COLONY COUNTS

Bowers and Hucker[1] showed in their original work using the modified medium at 37° C. that the average increase in count was greater in pasteurized milk than in raw milk. The majority of reports confirm this finding. Phelan[8] studied samples collected throughout New England and examined in the laboratories of the Hood Company at Boston. He used the modified medium at both 37° and 32° C. and found striking differences in increases in counts obtained in different classes of dairy products. The least increase occurred in certified raw milk, and the greatest in pasteurized cream where it exceeded 80,000 per cent in almost 1 per cent of the samples tested. Grade B raw milk yielded greater increases

than Grade A raw, and Grade B pasteurized yielded greater increases than Grade A pasteurized. These observations have been confirmed by other workers.

Stone found in the case of California samples that increases due to the modified medium were, on the average, about 30 per cent for raw milk and about 100 per cent for pasteurized milk. In California, increases in count using the modified medium at 37° C. are apparently less than in certain other sections of the country because their milk supplies have been so largely freed of those types of bacteria which fail to grow on standard agar at 37° C. Hardenbergh at Plainsboro, N. J., examined 280 samples of certified raw, and 30 samples of certified pasteurized milk, using a dilution of 1:100, and reported that standard agar counts were higher than tryptone agar counts in the majority of cases. Undoubtedly, the organisms present were almost entirely udder types which grow as well or better on standard nutrient agar than on the modified tryptone medium.

Several millions of dollars are annually paid to Grade A dairymen in this country as premiums for raw milk delivered with a low bacterial count. Yale studied data furnished by 3 New York City and 2 Philadelphia companies on 4,699 samples of Grade A raw milk. From the information obtained, equitable adjustments can be made so that neither producers nor dealers will suffer financial losses if changes are made in plating methods.

While the modified temperature exerts a greater effect on the count than does the modified medium in fluid milk, Curtis and Hileman [10] found that the modified medium had the greater effect on the count in dry skim milk.

The modified incubation temperature is especially advantageous for use with ice cream due to the abundant presence of types with an optimum growth temperature nearer 25° or 32° C. than 37° C. Robertson [12] summarized data furnished by 5 ice cream companies and compared the effect on the count produced by the modified medium and the modified temperature. He concluded that the modified temperature had the greater effect.

Data obtained by the various laboratories listed in Table I are in general agreement. The variety of ways in which results were reported made the preparation of a summary difficult and, for this reason, one outstanding study was selected for discussion rather than the work as a whole.

Kelly [9] acted as collaborator for the International Association of Milk Dealers in summarizing data collected by 17 milk companies in 10 states. The study was carefully planned in advance and complete directions sent to each laboratory. Through the courtesy of Mr. Kelly and the International Association of Milk Dealers, the cards containing the original data on 4,248 samples of milk and cream were loaned to the author and a frequency distribution table prepared (Table II).

Table II shows the number and percentage of instances in which increases or decreases fall within a certain percentage increase or decrease range. The groupings correspond closely to those used by Bradfield [5] with the exception that the group designated " no increase or decrease " is slightly broader, taking in minus 5 to plus 5 per cent.

Three points are brought out strikingly by the results shown in Table II. First, the numbers and percentages show that the modified temperature had a greater effect on the count than the modified medium while the combination had a greater effect than either alone. The average percentages of increase or decrease showing the effect of change in incubation temperature, the change in medium, and the combination of the two are +37, —7, and +59 per cent

TABLE II

Distribution of Percentages of Increases or Decreases in Counts by the Modified Methods as Compared to the Standard Method in the Case of 4,248 Samples of Milk and Cream Studied by 17 Milk Companies in 10 States

Percentage Increase or Decrease in Counts	S. A.*—32° C.		T. G. M.†—37° C.		T. G. M.†—32° C.	
	Number of Cases	Per cent	Number of Cases	Per cent	Number of Cases	Per cent
A.—1,164 Samples of Raw Milk						
—50 to —100	16	1	34	3	17	1
—6 to —49	160	14	282	24	103	9
No difference	122	10	150	13	101	9
+6 to +49	417	36	400	34	333	29
+50 to +99	196	17	149	13	238	20
+100 to +199	131	11	85	7	187	16
+200 to +299	59	5	23	2	57	5
+300 to +399	19	2	11	1	47	4
+400 to +499	9	<1	9	<1	18	2
+500 to +999	24	2	11	1	37	3
+1,000 to +1,999	6	<1	8	<1	16	1
+2,000 to +2,999	2	<1	1	<1	4	<1
+3,000 to +3,999	2	<1	..	..	3	<1
+4,000 to +4,999	..	..	1	<1	1	<1
+5,000 to +5,999	1	<1	..	..	1	<1
+6,000 to +6,999	..	..	..	..	1	<1
Total number of samples	1,164		1,164		1,164	
Number showing increase	866	75	698	60	943	81
Number showing decrease	176	15	316	27	120	10
Number showing no difference	122	10	150	13	101	9
Average percentage increase or decrease		+37		—7		+59
B.—1,071 Samples of Grade A Pasteurized Milk						
—50 to —100	33	3	90	8	34	3
—6 to —49	95	9	216	20	66	6
No difference	57	5	112	10	57	5
+5 to +49	197	18	266	25	141	13
+50 to +99	187	17	166	15	135	13
+100 to +199	220	21	109	10	208	19
+200 to +299	86	8	49	5	117	11
+300 to +399	57	5	21	2	68	6
+400 to +499	53	5	13	1	47	4
+500 to +999	56	5	16	2	124	12
+1,000 to +1,999	20	2	8	<1	51	5
+2,000 to +2,999	6	<1	4	<1	14	1
+3,000 to +3,999	4	<1	..	..	3	<1
+4,000 to +4,999	..	..	..	..	4	<1
+5,000 to +5,999	..	..	..	..	1	<1
+6,000 to +6,999	..	..	1	<1	..	..
+8,000 to +8,999	..	..	..	..	1	..
Total number of samples	1,071		1,071		1,071	
Number showing increase	866	83	653	62	914	86
Number showing decrease	128	12	306	28	100	9
Number showing no difference	57	5	112	10	57	5
Average percentage increase		+72		+46		+120

* Standard nutrient agar.

† Original formula of Bowers and Hucker containing 5 gm. tryptone, 1 gm. of glucose, 5 ml. of skim milk and 15 gm. of agar per liter. The dehydrated tryptone-glucose medium was supplied by Difco Laboratories, Inc.

for 1,164 samples of raw milk; +72, +46, and +120 per cent for 1,071 samples of Grade A pasteurized milk; +86, +52, and +191 per cent for 866 samples of Grade B pasteurized milk; +195, +56, and +245 per cent for 1,147 samples of pasteurized cream. As pointed out by Kelly,[9] the average

TABLE II (Cont.)

Distribution of Percentages of Increases or Decreases in Counts by the Modified Methods as Compared to the Standard Method in the Case of 4,248 Samples of Milk and Cream Studied by 17 Milk Companies in 10 States

Percentage Increase or Decrease in Counts	S. A.*—32° C.		T. G. M.†—37° C.		T. G. M.†—32° C.	
	Number of Cases	Per cent	Number of Cases	Per cent	Number of Cases	Per cent
C.—866 Samples of Grade B Pasteurized Milk						
—50 to —100	8	1	35	4	8	1
—6 to —49	33	4	166	19	32	4
No difference	51	6	76	9	36	4
+6 to +49	157	18	219	25	111	13
+50 to +99	175	20	142	16	101	12
+100 to +199	204	24	97	11	158	18
+200 to +299	90	10	41	5	113	13
+300 to +399	65	8	27	3	86	10
+400 to +499	29	3	11	1	44	5
+500 to +999	38	4	39	5	108	12
+1,000 to +1,999	15	2	9	1	48	6
+2,000 to +2,999	1	<1	3	<1	15	2
+3,000 to +3,999	..	..	1	<1	2	<1
+4,000 to +4,999	..	..	..	..	1	<1
+5,000 to +5,999	..	..	..	..	1	<1
+6,000 to +6,999	..	..	..	..	1	<1
+7,000 to +7,999	..	..	..	..	1	<1
Total number of samples	866		866		866	
Number showing increase	744	89	589	68	790	91
Number showing decrease	41	5	201	23	40	5
Number showing no difference	51	6	76	9	36	4
Average percentage increase		+86		+52		+191
D.—1,147 Samples of Pasteurized Cream						
—50 to —100	34	3	31	3	25	2
—6 to —49	79	7	131	11	55	5
No difference	69	6	79	7	50	4
+6 to +49	241	21	243	21	129	11
+50 to +99	168	15	179	16	125	11
+100 to +199	218	19	168	15	172	15
+200 to +299	98	9	100	9	117	10
+300 to +399	65	6	46	4	87	8
+400 to +499	32	3	29	3	61	5
+500 to +999	67	6	70	6	147	13
+1,000 to +1,999	33	3	39	3	95	8
+2,000 to +2,999	9	1	12	1	27	2
+3,000 to +3,999	8	1	8	1	12	1
+4,000 to +4,999	6	1	3	<1	11	1
+5,000 to +5,999	1	<1	..	..	2	<1
+6,000 to +6,999	..	..	2	<1	2	<1
+7,000 to +7,999	2	<1	2	<1	6	1
+8,000 to +8,999	1	<1	..	..	3	<1
+9,000 to +9,999	3	<1	1	<1	4	<1
+10,000 to +19,999	8	<1	2	<1	9	1
+20,000 to +29,999	1	<1	2	<1	1	<1
+30,000 to +39,999	..	..	..	..	1	<1
+40,000 to +49,999	1	<1	..	..	1	<1
+50,000 to +59,999	..	..	..	..	2	<1
+60,000 to +69,999	..	..	..	..	2	<1
+80,000 to +89,999	1	<1	..	..	1	<1
+110,000 to +119,999	1	<1	..	..	..	..
Over 1,000,000	1	<1	..	..	..	..
Total number of samples	1,147		1,147		1,147	
Number showing increase	965	84	906	79	1,017	89
Number showing decrease	113	10	162	14	80	7
Number showing no difference	69	6	79	7	50	4
Average percentage increase		+195		+56		+245

* Standard nutrient agar.

† Original formula of Bowers and Hucker containing 5 gm. tryptone, 1 gm. of glucose, 5 ml. of skim milk and 15 gm. of agar per liter. The dehydrated tryptone-glucose medium was supplied by Difco Laboratories, Inc.

decrease of —7 per cent in the case of the raw milk samples and the modified medium is misleading since it was due to a single sample. If the one sample is omitted, an average increase of 56 per cent is obtained. This affords an excellent example of the limitations of arithmetical averages.

In the second place, the increase in count due to modified methods is least in raw milk and progressively greater in Grade A pasteurized milk, Grade B pasteurized milk, and greatest of all in pasteurized cream, as illustrated by average percentage increases in count on tryptone agar with 32° C. incubation of 59 per cent in raw milk, 120 per cent in Grade A pasteurized milk, 191 per cent in Grade B pasteurized milk, and 245 per cent in pasteurized cream.

The third important point is that the use of modified methods does not merely result in a constant percentage increase in count. Many persons have not realized this and have opposed change in methods on the ground that there is no advantage in change if it merely results in a constant increase in count. While analysis of data by arithmetical averages may tend to convey this impression, analysis by frequency distributions (Table II) shows wide distribution in the range of decreases and increases. This indicates that the average percentage increase in the case of the modified methods is relatively uncommon.

SUMMARY AND CONCLUSIONS

The study of about 24,000 samples of dairy products by 56 laboratories shows conclusively that modified methods produce a greater spread between counts of truly good quality and truly poor quality products than does the present standard method. The numerical increase in count is slight in the case of truly high quality products.

At the present time, there is considerable lack of confidence in standard agar plate counts and a trend away from their use. Adoption of a better standard medium and a lower incubation temperature should do much to restore confidence in colony counts because of the better correlation between results obtained by inspectors and laboratory workers than is the case at the present time.

NOTE: Grateful acknowledgment is made to the many persons who assisted in the collection of the data which made this report possible.

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Syphilis Control in Industry*

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AT the turn of the century we were ignorant of the essential problems in the control of syphilis. In 1905 Schaudinn discovered the organism; in 1907 the researches of Bordet and Wassermann gave us the complement-fixation test; in 1910 Ehrlich performed his 606th experiment of a series and gave us salvarsan. In the short space of 6 years the new methods for diagnosing and treating syphilis were created.

Surgeon General Parran has pointed out that the first large scale experiment in the use of these weapons was an industrial experiment. It was war time. America's biggest industry—the war industry—was hiring more than five million military employees. An army needs health, and the new instruments against syphilis were used in a demonstration of military medicine that at the close of hostilities became also a popular campaign. That campaign unfortunately was abortive. As Dr. Parran pointedly suggested in his recent address before the American Medical Association, "We apparently thought that the spirochete was demobilized with the army."

In the years since that time the technic of the darkfield has been improved; the complement-fixation has been refined; and the sensitive flocculation tests have added to the accuracy of diagnosis. Within the past half dozen years the Coöperative Clinical Group Studies have given to the treatment of syphilis a precision which it did not have before. During the last 18 months the taboo has been broken. Syphilis is now discussed publicly.

Thus we have medical weapons in a highly perfected state. We have public acceptance and support. The next question is: Is the campaign against syphilis going to be a nine days' wonder, another thing that "something ought to be done about," or will it be translated into definite programs?

Medical historians will judge the fight on syphilis by its results. Those results can be measured only in terms of how many patients come to treatment, how many patients who come to treatment get adequate treatment, and how well also the existing medical facilities contribute to those results.

In this fight public health authorities can expect the coöperation of industrial medical services. Letting syphilis go on is bad economics; industry is alive to economics. Syphilis is a killer, as the Surgeon General has declared. More than 1,000,000 years of life expectancy is lost each year to syphilitic deaths. Syphilis as the cause of aneurysm, paresis, tabes dorsalis, and cardiovascular disease, is a threat to the efficiency and safety which are funda-

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mental in the industrial processes. Syphilis, through these diseases, costs America in institutional care between 40 and 50 million dollars every year. Both as a taxpayer and as an employer, industry is interested in all these phases of syphilis. There is no sum which has been suggested for control which approaches the present cost of syphilis to American communities. It has been well said that "the cheapest thing America can do with her million annual cases of syphilis is to cure them."

Some companies, but proportionately not many, have taken steps to meet this problem of syphilis. In the Division of Industrial Hygiene we recently directed letters to more than 200 industrial surgeons. To quote the summary of those studies as presented in the Surgeon General's book, *Shadow on the Land: Syphilis:*

> Of 80 companies employing nearly a million persons, only 15 make routine blood tests as part of the preëmployment and later periodic examinations. Among a total of 110,675 employees reëxamined, 5,313, or 4.8 per cent, were positive. Among a smaller number of applicants (21,239) 2.3 per cent were positive, indicating that those who know they have syphilis seek employment where no tests are made.

The proportion of the amount of testing done among the railroads is somewhat larger. Fifteen railroads, employing 414,684 of America's million railroad workers, reported that they had examined 119,535 of their employees. Some roads reported that virtually all of their employees had been tested. One railroad reported that it had tested 45,000 employees; another reported 20,000 employees tested, another 16,000, and another 8,000. This interest on the part of the railroads goes back for 15 years. More than 10 years ago the railroad surgeons drew up a recommended program for venereal disease control. Their interest stems in large measure from the importance of the safety factor in railroading.

There are two questions involved in the approach of industry to syphilis. The first is the general question of policy. Should blood tests be given? What should industry do to reduce the incidence of syphilis among its workers? What in general should be its attitude toward the employee with a positive Wassermann? The Surgeon General, in his address before the Medical and Surgical Section of the American Railway Association last June, and in an article he published in the September issue of *Factory*, a management magazine, summarized this problem in suggesting:

> 1. That routine blood tests are desirable for applicants for employment.
>
> 2. That routine blood tests are desirable at the time of periodic reëxamination of employees.
>
> 3. That industry with its compact organization will find the development of a vigorous educational program profitable.
>
> 4. That industry might extend that educational campaign into the field of prophylaxis.
>
> 5. That there is a responsibility upon the industrial medical officer to see that adequate modern treatment is available to employees at prices ordinary wage earners can afford—that if such is not available in private practice or at public clinics, the industrial medical service should itself undertake such treatment.
>
> 6. That syphilis must at all times be handled as merely another communicable disease. The privacy of relations between the worker and the medical service should be conducted in the best professional tradition. In ordinary cases it cannot be regarded as ground for the rejection of applicants or for the dismissal of employees, though treatment may be properly required.

The other principal problem is that of applying this general policy to particular workers and in particular types of jobs. What should industry do about the machinist with syphilis, the crane operator with syphilis, the waitress with syphilis, the plant manager with syphilis, and the chairman of the board of directors with syphilis?

One need not search far to conclude that the policies now applied are often hit or miss. I have in mind the policy

followed until a short time ago by the Civil Service Commission of the United States. It did not ask routine blood tests for syphilis from prospective employees. When, however, the fact was discovered that a prospective employee was infected, he was rejected out-of-hand. Expressions of deep solicitude for the retirement funds were made to explain the policy. A real interest in the retirement funds would have suggested that a policy of routine blood tests, plus the requirement of treatment, but without the policy of discharge, would be far more intelligent.

Or take this case from industry: Some months ago a young man applied for a job in an eastern air craft engine factory. His qualifications as a machinist were found to be high. He was hired. After a week's work he was given a physical examination, which included, as all good physical examinations should, a blood test. His blood test was positive. He was fired.

A few days later be became the patient of a prominent eastern syphilologist. He gave a history of having had a primary chancre some years before. The doctor that he consulted treated it with a "powder," probably calomel. When the secondary rash appeared, he had been advised to take baths in a solution of baking powder. This also had disappeared. Until the time of the blood test he had no knowledge of the true nature of his disease. It may be fairly said that his condition was due to the negligence or ignorance of the "physician" who originally saw his case.

This patient was willing to take treatment, eager to do so. His inability to secure a job, however, jeopardized his ability to pay for such treatment.

The syphilologist protested to the company. He pointed out that in that stage of the disease treatment was a definite bar to central nervous system complications and a definite protection from infection. The cure was almost certain. He offered to report from time to time on the progress of treatment. At the time the last correspondence relating to the case came to the Public Health Service the syphilologist had not received any reply from the company.

I need hardly say from the point of view of modern medical science that the syphilologist was right; the company was wrong. There was no element of risk involved in this case. By way of contrast it might be worth while to note that in the routine physical examination given to commercial pilots who fly the planes that use the motors that were built in the plant, who have the lives of passengers and the safety of expensive equipment in their hands, the blood test is not included. Yet *only* the blood test can reveal syphilis in the latent stage.

Or take another case from real life: The wife of a member of our staff was riding home in a nearly empty bus one evening when a talkative lady sitting next to her began to discuss the awful case of her maid. The girl, it seems, had been too insistent about her Thursday afternoons off. She had let slip the fact that she was going to her doctor and the scandalized housewife discovered that she had been under treatment for syphilis for nearly a year. The housewife, being highly moral and very timid, fired the maid.

Now obviously, the lady was not one who was systematic enough to ask a routine blood test in advance. Obviously, too, the maid belonged to that small fraction of syphilitics tenacious enough to continue treatment over an extended period. She was non-infectious and of no danger to anyone; in fact she was far safer than many whose blood test showed negative a week or so before.

This, though not a case of industrial

employment, is nevertheless typical of many management decisions with regard to syphilis. It is not dissimilar to the policy of the Civil Service Commission, as cited. Each of you can probably recall a dozen or more similar cases from your own experience.

These cases are worth citing because they emphasize the need for a careful consideration of syphilis and the job. One can lay down broad policies, but he must exercise administrative judgment within the ambit of those policies in terms of two variables: (1) the particular job, its requirements and responsibilities; (2) the particular syphilitic, the stage of the disease and the treatment taken.

When one considers the job there seem to be four principal sorts of human relationships involved. Three of these concern industry—the other, the individual job, is more or less distinguished by the fact that it is not integrated into a larger enterprise, the job of the farmer, the artist, or the prospector, for example.

The most obvious concern when one considers syphilis is the *personal contact job*. This group would include the food handlers, the hotel help, barbers, beauty parlor workers, Pullman porters, matrons, nurses, school teachers, and all whose work brings them into intimate personal relations with other people. It is these that present the greatest possibility of chance infection.

Considered in terms of the various stages of the disease, it is the early stage that is of most importance. The latent syphilitic is not likely to transmit an accidental infection. A paretic cook may spoil one evening's broth, but he is not apt to pass his syphilis on to anyone else. But the primary and secondary stages, when chancres, skin rashes, or mucous patches appear, are important. Anyone who has responsibility for this group of workers must keep high his index of suspicion whenever a skin lesion of any kind appears. The darkfield should be freely employed to discover the early cases in that 10 to 20 day period of the first chancre, before the blood turns positive.

The second job group in which syphilis is of importance to industry is the *job of responsibility*. The air pilot or the engineer, responsible for the safety of passengers, the operator of switches or interlocking systems, the train dispatcher, the crane operator, the executive with his financial responsibility for the management and finances of the enterprise, all would fall within a group which presents no extraordinary opportunity for accidental infection, but in which mental or physical failure under stress may have disastrous consequence to the safety of their fellow workers, the public, themselves, the equipment, or even the company.

Among various stages of the disease the first stage has only its public health importance. It is the latent stage and the incipient later stages which concern us. The need of periodic blood tests, of insistence on treatment which will arrest the disease before it enters the central nervous system or threatens an internal organ with aneurysm, is evident. Only the blood test will find syphilis at this stage. You are dealing, moreover, with an extremely valuable group of employees. These complications come in late middle life. The longer their seniority and training the more valuable they are likely to be: the higher they have risen in rank and leadership the sounder is the industrial policy which makes their cure a responsibility of industry.

There is another sort of job group, which I might call, for want of a better term, the *routine job*. Here will fall many of the operators of individual machines, janitors, helpers, and clerks. They present on the one hand no unusual problem of chance infection; on the other hand no physical or men-

tal failure would have large consequences to the work, their fellows, or patrons of the company.

This group of workers presents a problem which is present with the two classes mentioned before. I did not emphasize this because hazards of infection and safety were dominant considerations. If they have syphilis they are sick men. That fact must not be obscured by the fact that they are not bedridden. If they have early syphilis they have an infectious skin lesion which may be passed either venereally or by chance contact to others and will almost certainly be passed to their wives and children. If they have latent syphilis, however complete the apparent peace they have made with the spirochete, there are statements to indicate that they are not the efficient employees they would be without latent syphilis. It is true that there are no accident statistics to cover this point. One can find countless cases to illustrate the slow healing of wounds or bone structure in the case of syphilitics. One can find compensation claims paid for injuries which better medical advice would have set down to syphilitic infection rather than accident. How large this sort of thing bulks in the annual budget of a large industrial organization may be a matter of dispute. It is certain, however, that half a dozen such cases a year would bulk much larger than the cost of a company program for the control of syphilis.

Let us not forget this as we discuss the hazards of syphilis: There is a silver lining to the problem. Treatment is specific, certain in results. It is long, but no other serious disease yields so definitely to the physician. All these hazards are unnecessary if syphilis is found through routine blood tests, if treatment is available and adequate.

Two years ago an advisory committee to the U. S. Public Health Service was formed to consider the establishment of State and Local Programs for Venereal Disease Control. It included health officials, leading syphilologists. They sifted the experience of Sweden, Denmark, Great Britain, and leading states and cities of this country. They drafted a program which would serve as a blue print for states and municipalities which were setting up public health facilities against syphilis. From Social Security funds, $8,000,000 had been set aside for public health activities. With new funds available states which had allowed venereal disease control to atrophy were rehabilitating their programs.

That program recommended among other things, free laboratory service available to physicians and private medical services throughout the state. It should be possible, in any state with a well organized program, for companies, such as those many of you represent, to send your blood or dark-field specimens to a central state laboratory for analysis and report.

Such facilities are not yet universal. Where such state laboratories exist they sometimes refuse to perform tests on the large scale required by industrial concerns. There are two answers which may be given: The service is an integral part of the state's program of venereal disease control. It is one which you may properly insist on, using every appropriate resource of pressure to secure it. On the other hand, with the great growth of interest in venereal disease control, many state laboratories cannot expand their facilities rapidly enough to meet these needs. If satisfactory contract arrangements cannot be made with private laboratories, the cheapest way to secure performance of these blood tests would be the hiring of a technician to perform them in your own laboratory. It is work which would not, after the

first few weeks, take the full time of the technician. There are, I believe, few medical staffs that could not make effective use of an additional laboratory person of this type.

This is the solution to the problem applied by Dr. G. H. Gehrmann in Dupont's outstanding program of syphilis control. Tests were done by the company laboratory. Positive results were checked by second specimens and tests. If no definite history of the disease was found, positive tests were double checked by work in independent laboratories.

In Dr. Gehrman's original program the men were then directed to consult their private physicians. The latter were supplied the necessary information with reference to the patient. But Dr. Gehrmann's experience with private treatment of syphilis was not always good. As some clue to what you yourselves may find—perhaps you have already found it—I will quote his own comments on the work. He says:

> Each case has been followed persistently by the staff of the medical division to insure continuous treatment, and it is through this follow-up of employees who have been referred to their own physicians for treatment that so much has been learned of the difficulties which make the present plan of handling these cases seem unsatisfactory:
>
> The findings are enumerated:
>
> 1. Very few refuse to take their treatment.
>
> 2. Most physicians demand prices for treatment that are beyond the means of the individuals and out of reasonable proportion to their incomes. Some physicians maintain these high prices despite the fact that they are receiving arsphenamine, neoarsphenamine, and bismuth free of cost from their state.
>
> 3. Many physicians refuse to treat the referred cases, stating that no treatment is indicated, in spite of four plus Kahn and Wassermann reactions although the cases have never received adequate treatment.
>
> 4. Numerous physicians refuse to admit that their patients have syphilis (again in the face of four plus Kahn and Wassermann reactions). This group denies the validity of blood tests and states that they have known their patients for years, and further know that these same patients could not have contracted syphilis without their (the doctors') knowledge.
>
> 5. On several occasions the attending physician has sent a blood specimen to a private or state laboratory and the report has come back that the reaction is negative. In every instance the results obtained by the company laboratory have been corroborated by subsequent check, but the attending physician has not always admitted that the patient has syphilis.
>
> 6. Many cases are discharged as having had sufficient treatment, after 3 to 10 injections of neoarsphenamine without a heavy metal.
>
> 7. Some have been reported as being well after a few mercury inunctions or a few intramuscular injections of water-soluble bismuth.
>
> 8. Some are being treated with pills and nothing else.
>
> 9. Treatment at the free clinics is very satisfactory but it is not always possible for employees to conform to clinic hours and in some places the clinics refuse to treat any patient who is employed.
>
> The evidence (he refers here to the entire report) presented above indicates that the incidence of syphilis in industry is of sufficient extent to be well worth consideration both from the standpoint of public health and industrial risk. The problem of getting these cases adequately treated is extremely difficult, and the question arises, is it advisable for industry to assume the entire obligation of treating these cases?
>
> There is no question but that this work is well worth while, and there is no question about the adequacy of the treatment which the majority of these infected employees receive. But it does seem advisable for the industry to take over the entire management of these patients and thus insure to them continuous and proper treatment.

At some of the Dupont plants Dr. Gehrmann has since instituted the policy of treating employees suffering from syphilis. His reports would indicate the wisdom of the policy.

I would like to revert in conclusion to what industry may *expect* from state and local public health administrations. I need not discuss the administrative problems of the state and local health officers in detail. The details of these problems are their responsibilities, but there are some phases of syphilis con-

trol which the industrial medical service finds it difficult to handle by itself. Where did the employee with syphilis acquire his syphilis? How shall that source of infection be prevented from infecting others? The responsibility of finding the source of infection and eliminating it before the disease is spread to others is largely a job for the public health authorities, and the industrial medical officer should expect and receive vigorous coöperation in such case finding. Most public health officials will be glad to coöperate in bringing to treatment infected members of the syphilitic's family or those who do not have access to industrial medical care programs.

I need hardly reiterate that the industrial surgeon should expect and receive effective, expert consultation on the problems of control. The industrial medical officer is contributing one of the most effective possible medical units to the public health battalions against syphilis. He should expect, before long, that adequate facilities be available in every state for his serologic tests. He should receive, along with every other physician, free antisyphilitic drugs as part of the state program.

Where the industrial medical official does not receive this kind of coöperation, he should state his case clearly to his own management, to his medical organization, and to associations of business men who are coming increasingly to an understanding of this problem. With these as his allies, he should be able to secure action. He will find, in most cases where the health official has not coöperated, that it is a lack of administrative authority under the law or lack of funds that has made it impossible to coöperate effectively. Health officials will, I am sure, welcome such allies in educating legislators and the public to the problems of syphilis control.

Score Cards for Eating Places

SCORE cards for restaurants and other places serving food to the public will be issued by the Washington (D. C.) Department of Health. Establishments will be scored on the basis of rigid inspections of the premises, as well as bacterial determination in utensils, and other checks, one of which is health status of employees. No establishment will be given 100 per cent on the score card without a physician's certificate of health for each employee. Other checks include: serving of milk in original bottles; posting food signs; obtaining oysters from certified sources; discarding cracked china; and eliminating silver polishes containing cyanide. Records of illnesses among employees must be given to inspectors, including proof that proper medical approval has been given before an employee is allowed to return to work after illness.—*The Health Officer*, U.S.P.H.S., Dec., 1937.

Comparative Methods of Diagnosis of Rabies in Animals*

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NEGRI announced his microscopic test for rabies in 1903 which has since been generally followed in routine diagnostic work. A considerable amount of investigation concerning the pathological changes in the central nervous system had already been published. As early as 1892 Babes [1] described his "rabic tubercles." Ganglionic changes occurring in the disease were described by van Gehuchten and Nélis,[2] and McCarthy and Ravenel.[3]

Following the announcement of Negri's discovery earlier microscopic methods of diagnosis were gradually succeeded by the Negri body test. It is known that Negri bodies are not always demonstrable in the brains of rabid animals. Joseph Koch [4] states that 10 to 12 per cent of the brains which are positive on animal inoculation will fail to show Negri bodies when the customary method of examination is employed. This percentage of error, he claims, would be reduced if impressions or smears were taken from ganglion cells and various parts of the brain instead of from the Ammon's horn alone. The percentage of error will probably vary also with the prevalence of the disease in the geographical areas from which the material for diagnosis is obtained. In regions of high endemicity one might expect a high percentage of Negri negative specimens proving positive on animal inoculation.

Negri found peculiar intracellular bodies occurring with a high degree of constancy in different parts of the central nervous system, especially in the Ammon's horn of the hippocampus major or in the Purkinje cells of the cerebellum. These bodies exhibit marked variations in size; the diameter varying from 1 μ to 27 μ. In form they may be round, oval, or, in the larger bodies, pear shaped. The internal structure is reticulate and usually contains one or more vacuoles. The bodies are surrounded by a clearly defined membrane.

The injection of brain emulsion from rabid animals into rabbits and guinea pigs is uncertain in its results after incubation periods of 2 to 8 weeks. In consequence of the long incubation period and uncertainty of infectivity in these animals, their use has been very limited in recent years.

Mice have been tried as test animals by European workers, but have not proved satisfactory. Babes [5] in 1887

* Read before the Laboratory Section of the American Public Health Association at the Sixty-sixth Annual Meeting in New York, N. Y., October 8, 1937.

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reported that they were susceptible to rabies. He stated that they develop the furious type of the disease and that great care should be exercised in handling the animals during the late stages of the disease because of the danger of being bitten. Gerlach [6] reports a series of 26 white mice injected with street virus from Negri positive brains, only 17 of which died of rabies. He does not state how the injections were administered and does not recommend the white mouse as a test animal.

A questionnaire was sent to all state laboratories in the United States asking if confirmatory animal inoculations were employed with Negri negative material. Replies were received from 39 states, and 5 reported that all Negri negative material was being injected into rabbits or guinea pigs. Five laboratories stated that they occasionally checked their Negri negative material by animal inoculation. Among the above 10 states employing animal inoculation for the diagnosis of rabies, 5 listed the guinea pig as the animal of choice and 4 the rabbit, while one laboratory uses the guinea pig and rabbit on each specimen examined. The reasons given for not employing the confirmatory animal test included the following: (1) delay in obtaining a result, (2) inadequate facilities for housing animals, (3) cost of laboratory animals.

Webster and Dawson [7] have described an improved method of diagnosis by mouse inoculation. They make use of a special strain of white mice supposedly bred for special susceptibility to neurotropic viruses. Four to 6 weeks old white mice are highly susceptible to the rabies virus when inoculated intracerebrally with brain emulsion from a rabid animal. The mouse technic as practised in this laboratory is as follows:

Material, when not examined fresh, is preserved in full strength glycerin. A small portion of the Ammon's horn is ground up in a sterile mortar and 9 parts of hormone broth added to 1 part of ground brain material. This is thoroughly emulsified and then centrifuged at 2,000 to 2,500 revolutions per minute for about 5 minutes. With a 0.25 c.c. tuberculin syringe, 0.03 c.c. of the supernatant fluid is injected into the brain through the skull of a 4 to 6 weeks old mouse. A 27 gauge needle, ¼" long is employed, and the injection made slightly to one side of the mid line of the skull and half way between the eye and ear. The site of inoculation is moistened with alcohol before injecting. The mice are lightly etherized before the operation. It has been our practice to inoculate 4 mice with each brain specimen. When the injections are performed by experienced technicians, one can expect a mortality of 0.5 to 1.0 per cent due to mechanical injury. In our series of 1,032 brain specimens we have employed 5,339 mice with a mortality of 1.7 per cent due to mechanical injury. This is higher than usual and may be explained by the fact that many of the injections were performed by persons learning the technic.

Table I gives an analysis of the findings on 1,032 specimens from various animal brains received from Alabama, Georgia, West Virginia, Connecticut, and Havana, Cuba. Of the total received, 338 specimens were reported positive by the diagnostic laboratories, 690 negative, and 4 questionable. Among the 338 specimens reported positive for Negri bodies, 3 proved negative on mouse inoculation; 83 of the 690 reported negative (12.0 per cent) produced typical symptoms of paralytic rabies in the mouse, and Negri bodies were demonstrated in the mouse brain. Three of the 4 specimens reported as questionable by the diagnostic laboratories proved positive on intracerebral mouse inoculation.

TABLE I

Comparative Diagnostic Results by the Usual Laboratory Methods and the Mouse Inoculation Technic

Animal	*Number Examined*	*Reported +*	*Reported + Found —*	*Reported —*	*Reported — Found +*	*Per cent Reported — Found +*	*Reported Question-able*	*Reported Quest. Found +*
Dogs	815	307	3	506	67	13.2	2	1
Cats	135	14	0	120	5	4.2	1	1
Cows	44	12	0	31	4	12.9	1	1
Hogs	12	1	0	11	3	27.3	0	0
Mules	11	1	0	10	1	10.0	0	0
Human	4	1	0	3	2	66.7	0	0
Foxes	3	1	0	2	0	0.0	0	0
Horses	3	1	0	2	1	50.0	0	0
Chickens	2	0	0	2	0	0.0	0	0
Rat	1	0	0	1	0	0.0	0	0
Squirrel	1	0	0	1	0	0.0	0	0
Goat	1	0	0	1	0	0.0	0	0
Totals	1,032	338	3	690	83	12.0	4	3

In an effort to determine the relative susceptibility of the true field mouse (Peromyscus polionotus polionotus—Wagner) and the Webster-Dawson strain of white mouse, a group of white mice and field mice were injected with brain emulsion from 11 different animals. The same supernatant fluid from each specimen was injected at the same time into mice of the two groups.

Table II shows a slightly greater resistance to the rabies virus on the part of the field mice. This may be due in part to the fact that some of the field mice were well over 6 weeks of age, as could be determined by the ossification of the skull. The needle was forced through some of the skulls of field mice with greater difficulty than was the case with the younger white mice of known age. The field mice were much more excitable and difficult to handle, and in some cases the furious type of rabies was produced, whereas among the 5,339 white mice inoculated, none has shown the furious type.

When the disease appears among a group of inoculated mice, in the great majority of instances all mice in the group succumb. One survivor has been observed from each of 4 groups, and in 3 groups there were 2 survivors in each of 4 inoculated. The survivors may show early symptoms and later recover, but no recoveries are recorded after the disease reaches the paralytic stage.

After the development of paralysis, death follows on an average of approximately 48 hours. Sluggishness, roughening of the fur and loss of hair luster appear as the earliest symptoms, followed by photophobia in many cases and a conjunctivitis with sero-purulent discharge. Paralysis, most frequently of the hind legs, appears and the legs are extended either to the sides or straight back. At this stage convulsions are frequently seen, especially when the animal is disturbed by jarring or noise. Death is preceded by complete prostration and labored and irregular respiration. Of the 2,095 mice injected with rabies positive brain material, the majority died in from 10 to 12 days.

An occasional mouse inoculated intracerebrally with brain emulsion from a

TABLE II

Comparative Susceptibility of the Field Mouse and the Webster-Dawson Strain of White Mouse

SPEC. Nº	MOUSE	MORTALITY AFTER INJECTION (IN DAYS)																					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
510	White						I+				II	III											
	Field						I−	I−					I+			III							
511	White	I					I−		I+		II			I									
	Field				I		I−							II+		I	I						
513	White						I+			I	I	II	I										
	Field	II								I			II+	I	I								
514	White						I+				I	II	I	I									
	Field	I					I+						II			I	I	I					
897	White										I+			I			III		I				
	Field	I									I+								I	I	I		I
915	White								III+	III+													
	Field	I							I+			II				II							
932	White							I	II+		I	II											
	Field	II		II					I+					I									
933	White							IIII+	I	I													
	Field							II+		III				I									
937	White							IIII+		I													
	Field							I+		II		I		II									
948	White							I+	II	II				I									
	Field							I+		I	I	I			II								
971	White								I	II+	I	I	I										
	Field	I								I+			I	I	I								

| + Indicates mouse sacrificed and found Negri +
| — Indicates mouse sacrificed and found Negri —

positive case showed Negri bodies as early as the 5th day after injection. On the 6th day following intracerebral inoculation with Negri positive brain, 226 of 289 (78.2 per cent) mice examined were Negri positive and 3 doubtful.

It has been the experience of this laboratory that in brain material from animals vaccinated against or treated for rabies, Negri bodies are more difficult to demonstrate in the original material. The disease, however, can be produced in mice, with the production of Negri bodies, by inoculating with material from the brain.

A human brain from an adult dying of rabies following a face bite inflicted by a proven rabid dog was submitted for examination. This patient started treatment the day following the bite and received 3 injections a day for 15 days. The patient developed rabies 21 days after exposure, and the brain was found negative for Negri bodies on repeated examinations. Mouse inoculation with this material proved positive, and Negri bodies were present in the mouse brain on the tenth day after intracerebral injection. When a vaccinated dog develops the disease, it is usually of the paralytic or "dumb"

type, and the experienced veterinarian's diagnosis is of the utmost importance, as the Negri diagnosis is unreliable. In these cases the intracerebral injection is of particular value.

The mouse test offers a cheaper and more rapid method of diagnosis than is the case with the guinea pig or rabbit. Mice purchased from dealers cost 15 cents each but can be bred with little difficulty, thus reducing the cost. Reactions to rabies virus when injected intracerebrally into the mouse are very consistent and offer a reliable means of verifying the routine microscopic Negri technic.

SUMMARY

A technic for the earlier diagnosis of rabies by mouse inoculation is described. In addition to shortening the period required for animal diagnosis the method has the advantage of considerably reducing the cost. Comparative results from brain material of 1,032 animals diagnosed by the usual methods in several laboratories and then injected into mice confirmed the positive results obtained by the usual methods, but disclosed an error of 12.0 per cent for the brains reported negative for Negri bodies.

The vaccination or treatment of animals with rabies vaccine apparently increases the difficulty of diagnosis by the discovery of Negri bodies.

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Animal and Human Diseases

. . . Animal disease has a close connection with human disease, and students of public health will find much to think over in the Ministry of Agriculture's *Report of Proceedings under the Diseases of Animals Acts for the Year 1936.* Bovine tuberculosis is but one of the many subjects dealt with. It was reported to exist on 26,744 premises, and after examination by veterinary inspectors, 23,802 animals were ordered to be slaughtered, an increase of nearly 1,500 on 1935. The number of Attested Herds was 55 at the beginning of the year, and rose to 140 on 31st October, after which a rapid increase brought the total to 192 at the end of the year. (During the first quarter of the present year 58 further herds were added to the register.)—*J. Roy. Inst. Pub. Health & Hyg.,* 1, 2 (Nov.), 1937.

Tuberculosis Among Children and Young People in Cattaraugus County, N. Y.*

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IN discussing the problem of tuberculosis among children and young people in Cattaraugus County, one may well take into consideration various factors such as the population density and its composition, the prevalent occupations, the economic level, past and present tuberculosis mortality rates for all ages, and the antituberculosis agencies or facilities available. Tuberculosis among children is and in recent years has been only a minor health problem in this county. For this reason, and because of the importance of coördinating if possible the administrative control of tuberculosis in children with that in adolescence and early adult life, the writer has taken the liberty of extending in this presentation the age period up to 25 years.

The county lies among the foothills of the Allegheny mountains in southwestern New York. Its area is 1,343 square miles. Its population of 72,000 which has been almost stationary since 1920, is rural and semi-rural except for 31,000 persons residing in two small cities. The county is remote enough from large cities not to be suburban. Ninety per cent of the population are native born whites. There are about 1,000 Indians in two reservations and about 450 Negroes who live mostly in Olean, a city of 22,000. Agriculture, particularly dairying, is the main occupation, although about one-third of the inhabitants are in some form of industry. Only a few of these industries, however, appear to carry a tuberculosis hazard. Economically the county ranks in the upper third of the rural counties of New York State.

The crude mortality rate from tuberculosis was low for the county compared with that for New York State, when the County Health Department was organized in 1923, being for that year 72.6 per 100,000 for the county and 97.9 for the state. During the 5 years prior to 1923, the rate in the county was stationary, while since that time there has been a progressive decrease. Divided roughly into 5 year periods, the annual mortality rate for all forms of tuberculosis was:

	Per 100,000
1918 to 1922 inclusive	69.6
1923 to 1927 inclusive	55.7
1928 to 1932 inclusive	42.5
1933 through June 1937	28.9

Beginning with 1916, a County Tuberculosis Sanatorium has been available for the free care of resident tuberculous patients. Up to 1923 the institution had only one public health nurse

* Read before the Child Hygiene Section of the American Public Health Association at the Sixty-sixth Annual Meeting in New York, N. Y., October 5, 1937.

for field work. Since 1923 there has been a comprehensive, full-time County Health Department, with an adequate number of public health nurses for field supervision and a Director of the Bureau of Tuberculosis. For the greater part of this time the Director has been, concurrently, the Superintendent of the Sanatorium. He has conducted diagnostic clinics throughout the county, to which physicians have referred patients and to which nurses, with the physicians' consent, have invited contacts of tuberculosis patients. A consultation service in patients' homes has been furnished the physicians throughout the county. Both in clinics and consultations a portable X-ray equipment has been used. In addition, a tuberculin and X-ray survey was made among Reservation Indians because of their high tuberculosis death rate. X-ray surveys of juniors and seniors in high schools and of school teachers have been made as educational and case finding measures. Tuberculosis eradication among cattle has been a recent development, begun in 1923 when 58,928 head were tested with 7.1 per cent reactors. Elimination of reactors proceeded so rapidly and supervision of cattle has been so thorough that for the last 5 years less than 0.5 per cent have reacted.

TUBERCULOSIS AMONG CHILDREN

Under the conditions outlined, particularly with a low and steadily declining total tuberculosis death rate, one would expect very few to die from tuberculosis in infancy and childhood. Such is the case. During the past 15 years there were 17 tuberculosis deaths under 15 years of age, and none has occurred among county residents in this age group since 1932. On analysis this shows the annual tuberculosis specific death rate to have been, approximately, for whites under 15, 4 per 100,000 and for Indians, 137.

Data on tuberculin tests and diagnoses cover only the period since the beginning of 1928, and less accurately for Indians than for whites. In the past 9½ years only 9 whites and 5 Indians under 15 have been found to have reinfection tuberculosis. In addition some were seen with cervical lymph node lesions but these were considered primary. Tuberculin testing has been a routine procedure for all clinic children under 16. Those children who were not known to have been exposed to a positive sputum were observed to respond quite infrequently to 0.1 mg. of Old Tuberculin intradermally. This entire group of 2,621 clinic children tested during the 9 years prior to 1937 showed an incidence of 9.2 per cent positive reactions. Further sub-divided, during the first 3 years of this time the percentage of reactors was 15.6, while during the last 6 years it was only 4.8. About half were in the 10–15 year age group, and inasmuch as the composition of the clinic and the distribution by age were similar during the whole period, the figures suggest strongly that the so-called non-contact child is being infected less frequently than a few years ago. The clinic children under 16 tested during 1936, numbering 226, heavily loaded by 28 per cent of intimate tuberculosis contacts, showed only 11 per cent positive. A tuberculin survey of children in 85 rural and village schools showed 8.2 per cent positive among 1,183 tested under age 16, the majority being 10 years of age or older. A similar survey of 226 Indian children under 15 revealed 23 per cent positive reactors. This higher incidence of infection among Indian children is not surprising in view of the fact that the total Indian tuberculosis death rate has been in recent years 6 times that among whites.

On the basis of the rarity of tuberculosis deaths among children, the infrequency of reinfection tuberculosis

before age 15, the apparent mildness of primary tuberculosis, and the decreasing incidence of tuberculous infection in the same age period, the administrative measures which have been adopted and which are at present operative aim at less medical observation and care of infected children than formerly. Primary tuberculosis is not institutionalized but is kept in the home, while the open case, if found, is removed and treated. Re-X-raying of positive reactors with or without demonstrable primary lesions is not done until 14, from which age annual X-ray examinations are done until 25. Exceptions are made of course where exposure continues or symptoms develop. Adequate home observation by nurses is available and private physicians are coöperative. These conditions are important prerequisites to this plan. This shifting of emphasis from tuberculosis during childhood came about not only because of the relative unimportance of the problem but because of the questionable value of the former plan of placing children with primary tuberculosis in an institution. In our experience, some of these children with primary lesions, in spite of prolonged institutional care in childhood, proceed to develop in adolescence reinfection tuberculosis even though no known exogenous reinfection occurs. The two instances of this kind recorded in the past 10 years were in girls who had had prolonged exposure within the home as little children prior to the breaking of the contact and who had shown X-ray evidence of primary lesions in the chest.

TUBERCULOSIS IN ADOLESCENTS AND YOUNG ADULTS

What concerns the tuberculosis workers in Cattaraugus County more than the tuberculosis problem in children is the problem in adolescence and early adult life. It is believed that while many of those developing reinfection tuberculosis between ages 15 and 24 have been infected as infants or small children within the home, a still larger number probably have their first infection during or after the high school age and from sources outside the home. This belief is based partly on the low incidence of positive tuberculin reactions under 16 and partly on the failure to trace the source of the infection to the home in the majority of the adolescent and early adult cases. Routine examination of household contacts for several years enables one to speak with some assurance on this point.

Since the beginning of 1928, 106 persons between ages 15 and 24 have been found to have reinfection tuberculosis. In only 31 instances was it at all definitely established that the primary infection had occurred within the home. In a few it was strongly suspected to be among schoolmates or other associates outside the home. Theoretically, then, were all the tuberculosis families in a community known to the health department and, over a period of years, their contacts were properly examined, less than a third of the secondary reinfection cases in the above age group might be discovered, unless additional case finding methods were used.

In view of facts like these, the question arises as to how one can coördinate a tuberculosis program for young people with that for children. Methods followed and results obtained in Cattaraugus County may be noted to see whether any light is thrown on the problem. Tuberculosis deaths under age 25 during the past 15 years numbered 105, an average of 7 per year. Subdivided roughly into three 5 year periods, the annual deaths averaged for the successive periods approximately 11, 7, and 3, so that there has been, in this age period, an encouraging decline in deaths. Analyzed for whites and Indians (there being no bona fide

TABLE I

Tuberculin Reactors Observed Roentgenographically for Periods Varying from 3 to 12 Years

Age in Years, at Beginning of Observation Period	*Age, in Years at End of Observation Period*											
	Under 15	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*Total*
1	2	..	..	..	..	..	..	..	..	..	..	2
2	2	..	..	..	..	..	..	..	..	..	..	2
3	8	..	..	..	..	..	..	..	..	..	..	8
4	10	..	..	..	..	..	..	..	..	..	..	10
5	9	1	1	..	..	..	..	..	..	..	..	11
6	16	2	1	..	1	..	..	..	..	..	..	20
7	8	4	3	..	2	..	..	..	..	..	..	17
8	14	3	3	2	..	2	..	..	..	..	..	24
9	7	3	6	2	2	..	2	1	..	..	..	23
10	9	5	6	8	2	3	..	..	..	..	..	33
11	5	4	9	10	2	3	2	..	..	..	..	35
12	..	..	8	8	4	8	4	..	..	..	..	32
13	..	..	3	5	6	9	4	2	..	3	..	32
14	..	..	..	10	7	6	3	1	1	1	..	29
15	..	..	..	..	10	2	4	5	..	3	..	24
Over 15	..	..	..	..	..	8	15	12	18	10	12	75
Total	90	22	40	45	36	41	34	21	19	17	12	377

tuberculosis deaths among Negroes) these figures show an annual tuberculosis specific death rate per 100,000, under 25, for the three periods to be approximately as follows:

	Whites	*Indians*
1923 to 1927 inclusive	28	475
1928 to 1932 inclusive	17	295
1933 through June 1937	9	93

Forty-nine of the above 105 deaths occurred since the beginning of 1928, and 42 of these were in the 15–24 year age period, 55 per cent being females. The 106 cases of reinfection tuberculosis in the 15–24 year age period which have been recorded since 1928 have come to light through three sources (1) clinic patients referred by physicians; (2) cases reported by institutions outside the county; (3) cases discovered through the routine follow-up of juvenile tuberculin reactors, or through group X-ray surveys by the County Health Department. Ninety-one of the cases were referred by physicians for diagnosis, or confirmation of diagnosis, or were referred by institutions, while 15 came as a result of the department's observation which often had begun many years earlier. Those in the larger group nearly all had had symptoms at the time of diagnosis while those in the smaller group did not. This is reflected in the classification of cases of pulmonary tuberculosis at the time of diagnosis which showed in the larger group 26 per cent in the minimal stage and in the smaller group 67 per cent. Since January, 1936, 47 per cent of all new reinfection cases under age 25 were found as a result of routine follow-up of reactors or the X-raying of groups and of these 86 per cent of the pulmonary cases were in the minimal stage.

COÖRDINATION OF ADMINISTRATIVE METHODS FOR CHILDREN AND FOR YOUNG PEOPLE

To illustrate the type of medical supervision of juvenile reactors practised by the County Department of Health, two tabulations have been made. Table I shows for 377 reactors the age at the beginning of observation and for all but 90 of them the age to which observation has been extended up to August 1, 1937. (For the sake of brevity the 90 reactors whose ob-

servation has not yet continued to age 15 are totalled in one column.) These observations cover 2,382 person-years and include 1,966 X-ray examinations of the chest. Table II shows the tuberculosis findings resulting from the above observations. In Table II one is struck with the large number who have developed reinfection tuberculosis among those reactors previously exposed to open cases, and the relatively small number among those reactors not known to have been so exposed. Fourteen among 119, *i.e.* 11.7 per cent, of those reactors known to have had household exposure to a positive sputum have up to the present developed reinfection tuberculosis, while only 3 among 198, or 1.5 per cent, of those reactors not known to have had such exposure have done so. It will be noted also that those reactors showing X-ray evidence of primary lesions appear to develop reinfection tuberculosis in a much higher percentage than do those without such demonstrable lesions.

This appears to give a definite clue as to where much of the reinfection tuberculosis will be found in young people. It will be among those who have had intimate exposure to open tuberculosis. Naturally among children this is, commonly, within the home. It is self-evident then that this phase of preventive work—for early diagnosis is preventive work—among adolescents and young adults may be closely linked with that among children.

One is much less certain how to secure early diagnosis among the larger group of young people who give no history of intimate contact. There is, perhaps no compelling reason why the private physician should not enter as a leader the field of preventive medicine and tuberculin test children and young people repeatedly on a wide scale, then have the reactors X-rayed. Ordinarily, however, he does not do this, but waits until the patients seek him. They seek him because of symptoms, and by the time symptoms have developed most of these young people showing tuberculosis have moderately advanced or advanced lesions.

ADDITIONAL ADMINISTRATIVE METHODS AMONG YOUNG PEOPLE

The tuberculosis problem among young people is causing concern in many areas both in this country and

TABLE II

History of Exposure and X-ray Findings Among Tuberculin Reactors

Number of Reactors	*In Known Contact With Open Tuberculosis*	*In Known Contact With Tuberculosis Not Shown To Be Open*	*In Probable Contact With Tuberculosis*	*Having No Known Contact With Tuberculosis*	*Total*	*Reactors Developing Reinfection Tuberculosis*
Showing X-ray evidence of primary tuberculosis	56	12	2	33	103	12 11.6%
Showing no X-ray evidence of primary tuberculosis	63	34	12	165	274	6 2.1%
Total	119	46	14	198	377	
Reactors developing reinfection tuberculosis	14 11.7%	0	1 7.1%	3 1.5%		18* 4.7%

* Among these reinfection cases are included three under 15 years of age. Of these, 2 were pulmonary and 1 osseous.

abroad. It is easy to say that the X-ray examination is the method which must be generally adopted, and it is true. It is certain that if physicians and young people became tuberculosis conscious and demanded a far wider use of X-rays, the proportion of cases diagnosed in the minimal stage would be greatly increased. Here one enters the fields of health education and economics, both of which are fundamental in dealing with tuberculosis.

In Cattaraugus County the matter of early diagnosis in young people is receiving consideration. Some progress can be recorded. If the last decade be divided into two 5 year periods, in the first of these only 20 per cent of those between 15 and 24 years of age showing pulmonary tuberculosis were diagnosed in the minimal stage, while in the second 5 year period 55 per cent were so diagnosed. Besides the X-ray follow-up of clinic reactors, numerous X-ray surveys of juniors and seniors in high school have been made. Among 2,400 students X-rayed in this way only 3 reinfection cases were discovered. A tuberculin and X-ray survey of 650 Indians did not reveal new active tuberculosis at the time but resulted in adding to the roster many tuberculin reactors in the 15–24 year age group. Subsequent reëxamination of these has revealed 2 cases of pulmonary tuberculosis. The County Health Department offers at film cost X-ray services to all juniors and seniors in high school annually, to freshmen in the one college within the county, to nurses in hospitals, to young pregnant women, and to young workers in industry. The physicians are encouraged to use widely the free clinic and consultation X-ray service offered by the department and the free service for examining sputum offered by the County Laboratory. The coöperation of physicians is eagerly solicited to the end that prolonged isolation of open cases may be enforced. Even compulsory institutional care through court order has been resorted to. As for direct educational efforts, these include conferences with patients, family members, and physicians, talks to high school students and teachers and to Parent Teachers' Associations, distribution of literature especially in high school, and the use of the press and the radio. While these methods may all be helpful, it is felt that the X-ray examination of a young person's chest, with a word of explanation added, serves as useful an educational purpose as any.

While high school students are more accessible for examination than others of this age, a large proportion, though fewer than formerly, leave school at the 8th grade. Those going early into industry are now being X-rayed in many instances as a result of more stringent requirements of insurance companies which provide compensation.

There would seem to be justification for repeated X-ray surveys of apparently healthy young people for the reason, already stated, that more than two-thirds of the reinfection cases in this age period could not trace their source of infection, and for the additional reason that occasionally through such surveys young persons may be diagnosed who are still being exposed to mild, unreported but open cases of pulmonary tuberculosis in the home or elsewhere.

The data assembled in this paper show a definite concentration of new cases among the contacts. It must be remembered that these data represent concentrated effort in this group as well. If the entire youth of the county were X-rayed as intensively and persistently as this group has been, the yield of reinfection cases in the larger group undoubtedly would be higher.

The above methods are mentioned not because they are unique or because they have been particularly successful.

Until something better is found, however, it seems worth while to follow them. Reviewing the work of the past decade, it would seem that the most important single factor in helping reduce the tuberculosis deaths among children and young people has been the consistent effort to place positive sputum patients in a sanatorium or otherwise isolate them, and to keep them under such isolation until sputum is negative. The open case is being admitted to a sanatorium with more promptness following diagnosis than was the case a few years ago. There is no waiting list for admission to the sanatorium. At present there are only 3 positive sputum patients known in the county who are not in sanatoria or who have not had sanatorium training and care.

One method of attacking the problem that has not been used is attempted artificial immunization. The department still operates on the theory that it is better for the child to grow up without infection with tubercle bacilli. Possibly sometime this view will be discarded. In any case, there is no doubt general agreement that heavy exposure to virulent tubercle bacilli in childhood constitutes a health liability likely to handicap the child's future, and that this should be prevented by public health organizations, in coöperation where possible with physicians, voluntary health organizations, and hospitals.

No doubt the most economical method of securing early diagnosis in young people in Cattaraugus County theoretically would be to perform periodic tuberculin tests on a large scale, particularly among adolescents, fluoroscoping the reactors. There are in this county, however, practical difficulties in this plan: (1) In a large proportion of instances consent cannot be obtained for routine repeated tuberculin tests, except in established clinics where the young person usually is examined because of known exposure or because of a physician's request. (2) Fluoroscopy is relatively less valuable than the X-ray film and entails a great deal of time and labor on the part of the physician, since it cannot be delegated to a technician.

CONCLUSIONS

1. Tuberculosis among children in Cattaraugus County is a minor health problem. This is natural as there is a low, progressively decreasing total tuberculosis death rate; the tuberculosis infection incidence among children also is low and appears to be decreasing.

2. Children with primary tuberculosis are not placed in institutions, but persons with open reinfection tuberculosis are isolated promptly, usually in sanatoria. This probably has been the most effective measure in keeping tuberculosis among children at a low level and in reducing the incidence of infection.

3. Tuberculosis in adolescents and young adults is a more serious problem in Cattaraugus County though it appears to be less disturbing than it was a decade ago.

4. Besides the importance of close X-ray observation through adolescence into early adult life of those who have had childhood exposure to tuberculosis —a procedure which will disclose the highest percentage of reinfection cases— a wide use of the X-ray, with or without preliminary tuberculin testing, among young people in high school and in industry, is useful in increasing the proportion of minimal cases of pulmonary tuberculosis discovered. These measures have educational as well as diagnostic value. Practically, when funds are limited, intimate contacts of open cases should be repeatedly examined by X-ray. This should be done thoroughly first. Then, if there are additional funds and facilities, other groups of young people may be similarly examined.

Use of Dishwashing Machines: Pasteurization of Eating Utensils*

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AN investigation of machine dishwashing conducted at the Army Medical Center, Washington, D. C., during August, 1935, showed that the machines were improperly operated and in many instances the processed utensils had organisms of the respiratory and intestinal groups on their surfaces. A study of the fundamental principles of mechanics, thermodynamics, chemistry, and bacteriology involved in machine dishwashing was undertaken in order to determine the optimum operating temperatures and time periods for the wash and rinse processes. The 21 machines in daily use in the wards, messes, and restaurants of the Post, consisting of 19 intermittent type, single tank machines, a single tank conveyor machine, and a multiple tank conveyor machine, furnished adequate material. An automatically controlled intermittent type single tank machine [1] developed as a result of this investigation, was installed during these studies.

Speed is an essential requirement in machine dishwashing, especially during periods of peak load. The utensils must be freed of soil and bacteria and rendered physically and bacteriologically clean in a minimum time. This is accomplished by the action of the wash and rinse processes, which differ in operation in the single and multiple tank machines. In the single tank machine the wash water is pumped from the wash tank and sprayed over the surfaces of the utensils; the water then passes through the wash tank strainers or screens which retain the major portion of the soil removed from the utensils; reënters the wash tank; and is recirculated. Small particles of soil and bacteria pass through the strainers and are deposited upon the surfaces of the utensils. At the termination of the wash process, although all visible soil may have been removed from the surfaces of the utensils, they are still contaminated in direct proportion to the bacterial content of the wash water. The final cleansing of the utensils is accomplished by the action of the rinse water which is supplied to the machines from the hot water line. The rinse water is sprayed over the utensils, enters the wash tank diluting the detergent solution, overflows into the trap flushing away particles of soil and unsaponified grease. Reduction of the number of organisms in the wash water is effected during each rinse process.

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Multiple tank machines are equipped with separate tanks from which the wash and rinse waters are continuously circulated over the surfaces of the utensils. The action of the wash process is identical with that of single tank machines. The utensils reach the rinse process contaminated with minute particles of soil and bacteria which together with soil and bacteria on the conveyor belt are flushed into the rinse tank by the action of the rinse sprays and recirculated. Unless there be a final rinse with clear water, supplied directly from the hot water line, the utensil surfaces will remain contaminated with soil and bacteria.

The deposit of bacteria on the surfaces of utensils during the wash and rinse processes was demonstrated by processing sterile Petri dish bottoms (150 x 15 mm.) at 100° F. in tap water seeded with broth cultures of test organisms. Agar pour plates were made following processing in this manner, and read after 48 hours' incubation at 98° F. Table I shows the results obtained in single tank machines seeded with a mixture of broth cultures of *B. coli* and *Staphylococcus aureus*.

Any factor which favors the deposit of bacteria on the surfaces of utensils during processing, or protects organisms so deposited from free detergent and thermal action, lowers the efficiency of the wash and rinse operations.

The detergent and thermal actions of the wash processes are important. An effective detergent aids in the rapid removal of soil from utensil surfaces without causing precipitation of insoluble alkaline salts and gummy alkaline soaps, which, when present, are deposited as a sticky film upon the utensil surfaces by the mechanical action of the wash process. Three detergents were tested: (a) trisodium phosphate technical; (b) issue washing soda containing 25 per cent sodium bicarbonate and 60 per cent sodium carbonate; (c) a compound developed by Schwartz and Gilmore [2] containing sodium hexametaphosphate. The comparative amounts of precipitate formed by these detergents upon addition to hard water was demonstrated in the following manner: A 0.25 per cent solution of each detergent was prepared in tap water of 5 grain hardness and compared in the photelometer with a distilled water standard and 0.25 per cent solutions of the detergents in distilled water. The standard and the solutions of the detergents in distilled water gave readings of 100. The readings of the tap water solutions were as follows: Schwartz and Gilmore detergent, 99.7; trisodium phosphate 93.0; issue washing soda 78.0.

These detergents were used over a period of 60 days in dishwashing machines of similar type in 3 different

TABLE I

Deposit of Bacteria on Dishes During the Wash Process

Organisms per c.c. of Wash Water	*Number of Dishes Processed*	*Average Number Organisms per Dish*
420	47	39
960	49	52
2,100	48	87
11,800	49	244
43,000	49	377
76,000	48	482
97,000	49	Over 500

TABLE II

Comparison of Bacteria Counts of Utensils Processed with Trisodium Phosphate, Issue Washing Soda and the Schwartz and Gilmore Detergent

Detergent	*Number of Utensils Tested*	*Average Number of Organisms per Utensil*
Trisodium Phosphate	288	41
Issue Washing Soda	288	32
Schwartz and Gilmore Detergent	288	17

ward diet kitchens. At the end of the test period the utensils and the interior of the machine using the Schwartz and Gilmore detergent were free of film. The machines in which trisodium phosphate and issue washing soda were used were heavily encrusted with film and it was necessary to hand scour the dishes, glasses and silverware processed, at weekly intervals, in order to remove the film. Film is not only unsightly but forms a protective coating for bacteria which are caught on the gummy surface, reducing rinse efficiency. The insoluble salts and soaps when present are carried over into the rinse tank in multiple tank machines and cause film deposit during the rinse process. Sodium hexametaphosphate prevents the precipitation of insoluble alkaline salts and soaps responsible for film formation by forming soluble complexes with the calcium and magnesium ions present in the wash water, and permits free mechanical, detergent, and thermal action throughout the wash and rinse operations.

Hall [3] and Hall and Schwartz [4] have shown that under similar conditions, utensils processed with the Schwartz and Gilmore detergent were bacteriologically cleaner than those processed with trisodium phosphate. Bacteria counts were made daily, using the swab method, during the period the 3 detergents were under test. The utensils processed with the Schwartz and Gilmore detergent had fewer organisms on their surfaces than those processed with trisodium phosphate or issue washing soda. The results of these tests are shown in Table II.

Hall and Schwartz [4] and Mallmann [5] have reported germicidal activity for various detergents when tested under laboratory conditions. In actual dishwashing practice it is impossible to evaluate the bactericidal activity *per se* of a detergent because of the constant changes in concentration, chemical composition, and pH which take place during the wash and rinse operations.

Heat is the only active bactericidal agent of the wash and rinse processes unless there be an active germicide, such as chlorine, present in the solutions. The number of non-spore-bearing organisms in the wash water of single tank machines and in the wash and rinse waters of multiple tank machines is in inverse ratio to the temperature used. Each succeeding load of utensils should be processed in water containing a minimum of organisms. This is accomplished when thermal death of non-spore-bearing organisms entering the wash and rinse tank waters is effected prior to the processing of the next load of utensils. The survival of bacteria from run to run results in heavy bacterial contamination of the wash and rinse waters. Cumming and Yongue [6] reported an increase in the number of organisms per c.c. of wash tank water from 12,000 to 250,000 in a 5 hour period. Krog and Dougherty [7] reported over 900,000 organisms per c.c. in a sample of wash water from a public diner. The bacteria count of the wash tank water of a multiple tank machine operated at 120° F. for 90 minutes increased from 317 per c.c. to 24,600 per c.c. The count of the rinse tank water, operated at 140° F. increased from 7 per c.c. to 2,800 per c.c. during the same period. Under identical conditions using a 165° F. wash and a 180° F. rinse, the wash water count increased from 27 per c.c. to 184 per c.c. and the rinse water count from 1 per c.c. to 18 per c.c. The bacteria count of the wash water of an intermittent single tank machine operated for 90 minutes using a 120° F. wash and a 140° F. rinse, increased from 326 per c.c. to 22,800 per c.c. Using a 160° F. wash and a 180° F. rinse, the bacteria count per c.c. of the

TABLE III

Bacteria Counts of Wash and Rinse Waters for Standard Processing Periods at Varying Temperatures

Multiple Tank Machine

Wash Tank Temp. F.	Bacteria per c.c. Wash Tank Water		Rinse Tank Temp. F.	Bacteria per c.c. Rinse Tank Water	
	After 1 Minute	After 90 Minutes		After 1 Minute	After 90 Minutes
120°	317	24,600	140°	7	2,800
130°	291	19,400	150°	9	2,200
140°	186	2,400	160°	5	281
150°	93	320	170°	5	94
160°	42	214	180°	2	57
165°	27	184	180°	1	18
170°	12	67	190°	1	12

Intermittent Single Tank Machine

Wash Tank Temp. F.	Rinse Water Temp. F.	Bacter per c.c. Wash Tank Water	
		After 1st Run	After 90 Minutes
120°	140°	326	22,800
130°	150°	301	17,500
140°	160°	213	2,600
150°	170°	118	289
160°	180°	16	41
170°	190°	5	22

wash water increased from 5 per c.c. to 41 per c.c. Table III shows the results of the operation of single and multiple tank machines for a standard time period at varying wash and rinse temperatures.

The wash tank water of intermittent single tank machines is subject to changes in temperature during operation. Air at room temperature enters the wash chamber during the loading and unloading, cooling the walls of the machine and the residual water in the exposed wash lines. The utensils and rack enter the chamber at room temperature. An average period of 10 seconds is required to bring the utensils and chamber walls to the temperature of the wash tank water. During this period the cooler water returning to the wash tank lowers the temperature of the wash tank water. The average reduction when the wash process is operated between 140 and 160° F. is 3°. The sources of heat used in mechanical dishwashing are not flexible enough to overcome this drop immediately, and from 10 to 15 seconds are required to return the wash water to the original temperature. The wash water of multiple tank machines is not subject to these variations. Rinse water delivered to the machine by exposed hot water lines is subject to cooling between runs. The reduction in wash water temperature may be overcome by processing at a temperature 3° F. higher; that of the rinse water by proper installation of the hot water lines.

The efficency of the wash process of all types of machines is affected by: (a) the thoroughness of the scraping of the utensils, (b) the position of the utensils in the wash chamber, and (c) the mechanical action and pattern of

the wash sprays. The removal of all possible soil by efficient scraping reduces the soil load and conserves detergent powder. Proper position of the utensils is necessary; if crowded together full detergent action of the wash water is not obtained. Glasses, bowls, and deep lipped utensils must be placed on edge in order to avoid accumulation of wash water thus preventing detergent action. Spray nozzles and rinse lines may become clogged with particles of soil, causing dead areas which escape effective processing. The manufacturer's setting of the wash and rinse sprays must be preserved, for if the streams of water strike each other the detergent force is reduced to zero.

Utensils soiled with moist proteins (egg albumin and egg yolk), and protein and starch mixtures (mashed potatoes) are readily processed at wash water temperatures from 140 to 190° F. without "cooking" action. Dried protein and protein and starch mixtures are difficult to remove at any wash water temperature. Utensils so soiled should be soaked in water prior to processing. All visible traces of moist "soft boiled" egg yolk and mashed potatoes were removed from utensils during a 30 second wash process, while it required a minimum wash process of 120 seconds to remove similar amounts of dried egg yolk and mashed potatoes.

The rinse process of single tank machines should be operated only for sufficient time to flush the utensil surfaces thoroughly. Excessive rinsing causes dilution and waste of the detergent used. Rinse efficiency is in direct proportion to the force and temperature of the water. Effective rinsing is obtained in 10 seconds in single tank machines at 180° F. and 30 to 50 lb. pressure. A 20 second rinse at 180° F. should be used in multiple tank machines equipped with rinse tank only, in order to effect thermal death of non-spore-bearing organisms carried over from the wash process.

TABLE IV

Bacteria Count per c.c. of Wash Water; Dirty Single Tank Machines

Machine No.	*Organisms per c.c. Wash Water*
1	26,000
9	31,000
10	18,000
11	50,000
12	8,200
36	34,000
H.H.	6,100

Cleanliness of the working parts of machines is essential. Spray nozzles should be detached and cleaned daily. The interior of the chamber, the strainers, tanks, the door grooves and overlaps should be cleaned after each period of use. Massive contamination of the wash and rinse waters results unless the machines are kept clean. Bacteria counts as high as 50,000 per c.c. were obtained from samples of wash water from dirty single tank machines. These machines were operated as usual but purposely permitted to go without cleaning. The wash tank strainers were emptied but not cleaned and the wash tanks were not flushed after emptying. After standing for 14 hours at temperatures from 78 to 90° F. the wash tanks were filled with clear tap water and the machines operated for a period of 2 minutes. Following this, samples of the wash waters were obtained for bacterial count. Table IV gives the results of the wash water counts.

Cumming and Lynch [6] and Cumming, Spruit and Reuter [9] showed that used eating utensils were contaminated with organisms of the respiratory group. Krog and Dougherty [7] found *B. coli* in the rinse waters of 19 public bars and taverns. Mallmann and Devereux [10] reported finding streptococci (hemolytic, nonhemolytic and viridans) on used beverage glasses. Organisms

of the respiratory and intestinal groups were found on improperly processed eating utensils at this station. In a preliminary study of the rôle of the tubercle bacillus in dishwashing, conducted at this laboratory, tubercle bacilli were isolated from spoons used by persons with active cases of this disease. In addition to the organisms mentioned, soil bacteria, yeasts and molds and air-borne contaminents are commonly present. The tubercle bacillus and the thermophilic bacteria of the respiratory and intestinal groups are the most resistant to heat of these organisms, the spore bearers excepted. Since heat is the only constant bactericidal agent in machine dishwashing, processing at temperatures and for time periods sufficient to cause thermal death of the tubercle bacillus and the thermophilic bacteria should reduce viable organisms in the wash and rinse waters and on the processed utensils to a minimum. A 60 second wash process at not less than 160° F. followed by a 10 second rinse process at 180° F. was adopted for intermittent single tank machines and a 40 second wash process at not less than 165° F. followed by a 20 second rinse at 180° F. for single and multiple tank conveyor machines. Tests conducted regularly for over 1 year on all machines showed that utensils processed at these standards were bacteriologically clean. The wash water of an intermittent single tank machine, in the restaurant, after 12 hours of almost continuous use, contained 179 organisms per c.c., of which 23 were non-spore-bearers. The bacteria counts of processed dishes, glasses, and spoons averaged 15 non-spore-bearing organisms per cultured surface. The methods of processing have been carefully checked using a culture of *B. coli* (U. S. P. H. S. strain, regularly reduced 99.99 per cent in 30 seconds at 160° F. in milk or buffered distilled water). Wash tanks of single and multiple machines were seeded with 20 c.c. of an 18 hour broth culture of this organism. Sterile Petri dishes were processed at the standard temperature and time periods. The broth culture was introduced into the wash tank during the first 10 seconds of the wash process in order to simulate the actual detergent action. Immediately following each run samples of the wash and rinse waters were obtained for count and agar poured into the Petri dishes which were incubated for 48 hours at 98° F. A 99.99 reduction of the or-

TABLE V

Bacteria Counts of Dishes and Wash and Rinse Waters After Processing in Machines Heavily Inoculated with B. coli

Intermittent Type Single Tank Machine *

Bacteria per c.c. Wash Water Control	*Av. No. Bacteria per c.c. Wash Water at End of Each Run*	*Number of Utensils Processed*	*Av. Number Bacteria per Utensil*
600,000	49	210	14

Multiple Tank Machine †

Bacteria per c.c. Wash Water Control	*Av. No. Bacteria per c.c. at End Each Run*		*No. of Utensils Processed*	*Av. No. Bacteria per Utensil*
	Wash Water	*Rinse Water*		
700,000	55	12	252	9

* 60 second wash at 160° F., 10 second rinse at 180° F.
† 40 second wash at 165° F., 20 second rinse at 180° F.

ganisms seeding the wash tank waters was obtained. Controls were run using the same amount of broth culture at a wash temperature of 100° F. and a rinse temperature of 140° F. The results of these tests are shown in Table V.

Because dishwashing is ordinarily considered a menial task, consisting in the main of tossing utensils haphazardly into a machine containing a solution of a "soap powder," proper administrative supervision is neglected. The evidence presented emphasizes the necessity—from a public health standpoint—of more than merely "washing" utensils.

The term "Pasteurization of Eating Utensils" is used as it is believed that it best described the flash method of thermal destruction of the organisms contaminating used utensils, and conveys to the average mind an accepted standard of cleanliness.

CONCLUSIONS

Soil and bacteria are redeposited upon utensil surfaces during the wash process in single tank machines and during the wash and rinse tank processes in multiple tank machines. Final cleansing is accomplished by the action of the clear water rinse.

The formation of film during processing lowers the efficiency of the wash and rinse operations. Sodium hexametaphosphate by preventing film formation permits free detergent, thermal, and rinse actions.

Thorough scraping of utensils, proper loading, temperature control, mechanical action of wash and rinse sprays, and machine cleanliness are necessary for efficient operation.

Heat is the active bactericidal agent of machine dishwashing. The operation of intermittent single tank machines for a 60 second wash process at not less than 160° F., followed by a 10 second rinse at 180° F. and of multiple tank machines for a 40 second wash process at not less than 165° F., followed by a 20 second rinse at 180° F. results in a 99.99 per cent reduction of the non-spore-bearing organisms contaminating the used utensils.

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The Rôle of the Nurse in the Control of Syphilis and Gonorrhea*

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THE control of communicable diseases has long been recognized as a basic public health enterprise for the protection of the community. The results of scientific research and discovery, and the activities of local, state and federal health agencies have been markedly successful in the field of prevention and cure. Many of the common communicable diseases have been practically eliminated and great advances in the management of other plagues of mankind presage their rapid reduction to an irreducible minimum.

No small share of this success has been ascribed to public health nurses. Authorities in public health practice give these workers a recognized place in all plans for community health protection because of their training, their numbers (there are approximately 20,000 public health nurses[1] in the United States), and their ready access to homes everywhere. This relationship with families gives them an unprecedented opportunity to disseminate widely facts which the public needs to know in order to coöperate intelligently with physician and health officer in the broad community health program.

Although nurses have been almost universally employed in general communicable disease work, their usefulness in syphilis and gonorrhea control has been questioned and often entirely ignored; yet these diseases are serious menaces to family health, are communicable, and amenable to treatment and public health management. The fact that they are bound up with personal relationships and the customs and taboos of society has inhibited the professional worker and has been a major factor in their continued prevalence.

It has been shown repeatedly that when the nurse has seen the problems of syphilis and gonorrhea control as an indisputable part of her program the obstacles which loom to insurmountable proportions in theory dwindle in practice to those routine difficulties which complicate all types of individual and family health work.

The attitude of the worker is the foundation upon which accomplishment succeeds or fails. This attitude is fostered by education, and the development of a scientific attitude toward these disease problems. It becomes crystallized as the worker acquires a deep respect for personality, a growing ability to see situations through the eyes of the patient, an aptitude for building on strengths rather than weaknesses, and a profound faith in the powers of persuasive teaching and the

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futility of the weapons of fear and force.

It cannot be too strongly emphasized that effective work in syphilis and gonorrhea control requires informed, well trained workers. Education on the job, through institutes, staff education, and summer school courses, must be accepted as a necessity, and improvement and enrichment of courses in training schools should be stimulated.

Happily, the Washington Conference on Venereal Disease Control Work [2] in December, 1936, made the old controversy regarding the nurse's responsibility in the control of syphilis and gonorrhea a dead issue. The emphasis upon the family aspects of these diseases, especially their disastrous effects upon mothers and children, offered a challenge to all family health workers, and pointed to the potential value of the community nurse as a case finder and case holder.

It is fortunate that the principles underlying the control of the genito-infectious diseases do not differ greatly from those laid down for other communicable diseases. The spread of infection in any case is not checked until the community is protected from the patient himself, the source of his infection, and all those contacts to whom he may have given the disease. All known patients must have continuous treatment until cured, or rendered non-infective, and must avoid activities which will endanger others. Patients must be found and brought to medical care in the earliest stages of the diseases for the sake of community protection and in order that the best possible results may be obtained from treatment.

The program for syphilis and gonorrhea control has been tersely described under 3 heads: (1) education, (2) investigation, and (3) treatment. Such activities as are intrinsic here dovetail with the recognized functions of the public health nurse whether in industry, private visiting nurse associations, schools, or health department. Educative and investigative technics are part of her stock in trade, and efforts to bring patients early to medical attention and encourage faithfulness to treatment belong to everyday field work routine.

To return to the 3 point program mentioned above, the following come definitely within the province of the nurse:

Education:

1. Assisting with case holding by seizing every opportunity to clarify the situation in which the patient with syphilis or gonorrhea finds himself. This may be an interpretation of diagnosis; an explanation of the reasons for the arduous treatment regime; an exposition of the why's and wherefore's of clinic red tape, or encouragement by re-emphasizing the hope for cure. The control of syphilis or gonorrhea depends, in the last analysis upon a well informed patient.

2. Assisting with general community education by being prepared to give satisfactory information to those who inquire about the diseases, and those who need to be set right regarding fallacies and misunderstandings and unfounded prejudices.

Investigation:

1. Assisting with the tracing of sources of infection. The nurse's knowledge of the families in her bailiwick is intimate. She enjoys the confidence of patients because of her friendly services, and information withheld from others is often hers for the asking.

2. Making arrangements for family contact examinations as she arranges for dental care, tonsillectomies, and a thousand and one other health emergencies.

3. Assisting with the discovery of the unsuspected case by the unfailing recognition of danger signs whether in health histories or the patient himself, and by implanting a desire for medical attention in all who show deviations from accepted health norms.

Treatment:

1. Sharing with patients who need medical attention (but cannot afford private care) a knowledge of hospitals and clinics where free or low-cost treatment may be obtained.

2. Making definite arrangements with such

treatment centers for the admission of patients who need medical examinations or specific treatment.

3. Recognizing other health and social needs in families where syphilis or gonorrhea is present, and through coöperative agency planning, assisting with the removal or alleviation of conditions which hinder effective treatment and efficient living.

Such are a few of the unmistakable ways in which the public health nurse may strengthen the community program for the control of the genitoinfectious diseases.

The community nurse's chief contribution, however, is to that phase of the syphilis program which has to do with the control of syphilis in pregnancy and the prevention of congenital syphilis.

The statements from Dr. Parran's recent book, *Shadow on the Land*,[3] should arouse public health nurses to action:

One million potential mothers in the United States now have, or have had, syphilis. . . .

No woman who has had syphilis can be assured that she will not bear a syphilitic child without treatment during pregnancy. . . .

Each year, 60,000 children are born in the United States with congenital syphilis. . . .

Ten times out of eleven, the syphilitic mother will bear a healthy child if treatment is adequate and is begun before the fifth month of pregnancy.

Three times out of five, the syphilitic mother will bear a healthy child if treatment is begun after the fifth month of pregnancy. . . .

Some treatment, any treatment, reduces the risk of congenital syphilis. . . .

Treatment for the control of syphilis in pregnancy has been standardized and outlined in such form that all who run may read. The results of adequate treatment are dramatic. The ultimate eradication of congenital syphilis which is now taking a terrific toll in lives and in human happiness and efficiency is no Utopian dream. The public health nurse might be a powerful force in accomplishing this desired result. No other worker is as fortunately placed as she, to investigate, to supervise, and to teach, to the end that all pregnant women may seek medical care early and receive the benefits of adequate treatment for themselves and their unborn children if infection is discovered.

It would seem a valuable experiment for organizations to study the possibilities for assisting with the syphilis and gonorrhea control programs in their own communities, and to bring about an alliance of coöperating agencies to this end. It is certain that until a working plan is developed between medical agency, health department, and nursing association, little profit will come from ventures in this field.

There are other realms of usefulness for the nurse in case finding, case holding, and the follow-up of patients who discontinue treatment. These take on the nature of a specialized service, and are particularly appropriate for workers in clinics, the health department, or other agencies which have a measure of responsibility for syphilis and gonorrhea control.

Follow-up, with all its attendant activities, has long been considered the responsibility of medical social service departments where these have existed in hospitals and clinics. In the work with syphilis and gonorrhea patients, however, such follow-up programs have been necessarily restricted, because of ever-widening ramifications and an already overburdened staff. In few instances has the ground been covered adequately from the angle of public health and present epidemiological standards.

In recognition of the need for strengthening the state program at this point, the Massachusetts Department of Public Health has promoted a plan (with the help of Social Security Funds) for supplementing the existing follow-up services in certain hospitals

in Metropolitan Boston, and in other important clinic centers throughout the state. Under this plan, 9 follow-up workers have been added to the staffs of the larger clinics, although all of the 30 clinics in the state already had basic follow-up services. The state coöperates by making funds available to each clinic to cover salary, clerical assistance, and travel expenses of the new personnel, but assumes no administrative or appointive responsibility.

These workers are public health nurses in the majority of instances, although social workers are also employed. The public health focus is essential to the success of the program. The workers must not lose sight of the importance of mass achievement as distinguished from too much individual effort upon patients who present long-time problems. All complicated case work situations are referred to the hospital social service departments for solution, since rehabilitation of patients and families is as necessary to community well-being as the emergency measures of public health control.

The standard procedure for the follow-up workers includes the immediate investigation of certain classes of patients in the order listed below:

1. Patients who have discontinued treatment for early (primary or secondary) syphilis
2. Identifiable contacts of such patients
3. The pregnant woman with syphilis
4. The infant with acute congenital syphilis, or the child with interstitial keratitis
5. Patients who have lapsed treatment for gonorrhea
6. Identifiable contacts of such patients
7. Familial syphilis in any stage not included in above
8. Patients with late syphilis

Although these workers are doing the emergency follow-up, their approach to patients is not perfunctory. They definitely strengthen case holding in the clinic by re-interpreting diagnosis, by explaining the mystifying or unfortunate happenings in the hospital, which may have discouraged the patient, and especially by making sure that the patient's reinstatement in the clinic will be consummated without annoying accidents.

One of the tragedies of follow-up is to convince a patient of the importance of continuing treatment, and to have him subsequently met at the clinic door by a cold rebuff. Such a person is frequently lost to clinic influence thereafter.

Let it be understood that the patients visited by the workers in the Massachusetts project represent the more difficult group who fail to respond to hospital follow-up letters. Formerly, such patients would have been reported to local health departments as recalcitrant. The advantage of the present type of follow-up is that the worker represents the clinic which the patient is attending and not the board of health. Thus, the patient is not antagonized by implications of delinquency on his part and is reassured regarding the interest of the clinic, and the confidential nature of its services. The success of the new work is shown in an increase in clinic attendance, and a declining number of uncoöperative patients on the books of the local boards of health.

From January 1, 1937, to July 1, 1937, rough estimates[4] indicate that 2,462 cases of syphilis and gonorrhea have had follow-up visits. Of these, approximately 68 per cent, or 1,683 patients, have been successfully brought back to treatment, or persuaded to seek medical advice. This is an encouraging accomplishment when compared with the best figures obtainable for board of health follow-up. In a 6 year period, 43 per cent of 20,000 patients were found, but there is no information available as to how many actually returned to treatment.

Cases which failed to respond to this new type of follow-up numbered 779, or about 32 per cent. In one district, largely residential, 80 per cent of the patients responded satisfactorily. The congested sections of cities presented the more difficult problems. It would be folly to intimate that such estimates could accurately measure qualitative results. They are but straws in the wind. The program is still experimental, and only a superficial study of figures has been possible thus far. As the work progresses and technics improve, better results are certain (see Table I).

A capacity to learn out of failures as well as successes is a necessary attribute of these workers. Such continuous and serious efforts on the part of the nurses and social workers will at long last bring a definite and demonstrable halt in the spread of the genitoinfectious diseases.

A like service is being offered to private physicians who are shouldering a greater burden than the clinics. The problem has been how to reach this group. The traditional personal and confidential relationship of physician to patient makes for reluctance on the part of the physician to accept help from outside organizations—particularly, the state! During the past year, the department has begun experiments with a confidential service. A public health nurse is loaned (on a time basis) to physicians who desire assistance in the follow-up of lapsed cases or contact tracing. The nurse becomes the physician's nurse the moment she enters his office, and at no time does she represent the Department of Health. All identifying data regarding the patient is kept strictly private and is not available for state records. The department has no part in the procedure beyond receiving statistical data and providing personnel.

Of the doctors visited thus far, only a negligible group has failed to avail itself of the service. The program has been too limited up to the present time to quote statistics, but it can be stated that the majority of cases which discontinued treatment or were exposed to infection have been closed to medical care to the satisfaction of physician and patient. There has been nothing to disturb the patient's faith in the physician's interest in him as a person, and in his sincere desire to keep the patient's confidences inviolate.

Public health nursing organizations frequently complain of their inability to carry on any kind of program in syphilis and gonorrhea control work because of the lack of coöperation by the local doctors. Might it not be worth while to experiment with such a scheme as this and build up a new relationship? Loaning nurses on a

TABLE I

RESULTS OF FOLLOW-UP
JANUARY 1, 1937–JULY 1, 1937

Massachusetts State Project for Supplementing Existing Epidemiological Services

			Results	
Disease	*Cases Referred*	*Visits Made*	*Cases Returned to Treatment*	*Failures*
Syphilis	1,858	3,032	1,335	523
Gonorrhea	528	774	301	227
Undiagnosed	76	126	47	29
Totals	2,462	3,932	1,683	779

time basis to clinics is a widespread practice—why not to the private physician?

Studies of the incidence of syphilis and gonorrhea show that the peak of prevalence of these diseases is found in the age group of 15 to 30 years. This fact should have significance for the public health nurse in industry and in the schools. The tremendous possibilities for educative procedures and for case finding in these situations is only just beginning to be recognized.

CONCLUSIONS

1. Public health nurses in schools, industrial plants, health departments, clinics, and visiting nursing organizations have a definite contribution to make to the control of syphilis and gonorrhea.
2. Provision should be made for acquainting agencies which employ nurses of their opportunities to assist in the control program.
3. Provision should be made for acquainting clinics, private physicians, and health officers with the work which nurses are qualified to do in case finding and follow-up.
4. Provision should be made for the continuous education of the public health nurse in the medical, public health, and social aspects of syphilis and gonorrhea control.
5. Studies should be made of local community needs, and appropriate contributions of the nurse in different types of agencies. Experiments in this field should be evaluated from qualitative and quantitative standpoints.

Syphilis and gonorrhea are major public health problems today, and they are amenable to public health control. There are 20,000 public health nurses in the country. Is it not imperative that the skills of this group be enlisted in the nation-wide campaign which was initiated last December?

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Cemeteries or Playing Fields?

. . . When speaking at the International Cremation Congress last month, Lord Horder described burial as a luxury we could no longer afford. Land was needed for building and for the recreation of the people: to continue the uneconomic use of land for the wasteful purpose of burial would be criminal in the face of the social needs of the population. Already most civic authorities were despairing of finding fresh acres for cemetery purposes and were turning to cremation as a means of preserving the land in the interests of the living. Cemeteries or playing fields? That was the question, and from an educated community there could be only one reply.—*J. Roy. Inst. Pub. Health & Hyg.*, 1, 2 (Nov.), 1937.

A Suggested Program of Control of Amebiasis by Health Departments*

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THAT infection with *Endamoeba histolytica*, or amebiasis, which includes amebic dysentery, is a public health problem in this country is slowly but surely becoming recognized, and it is greatly to the credit of the Mississippi Public Health Association, and of the State Board of Health of Mississippi, that amebiasis has been so recognized for several years and that measures to combat it and to secure reliable data as to its incidence have been pursued by the State Board of Health. This has resulted in more accurate statistics as to the incidence of this infection and, in fact, Mississippi stands almost alone among the states of the Union in possessing any really reliable statistics concerning amebiasis. As I stated in my Presidential Address before the American Academy of Tropical Medicine, in 1936:

> The only state which is apparently "amebiasis-conscious" is Mississippi, for in 1932 the State Board of Health reports 481 cases of amebiasis. Whether these were all cases of amebic dysentery, or not, we have been unable to learn, but probably not. At any rate, the State Board of Health in Mississippi is apparently succeeding in obtaining much more accurate information regarding the incidence of amebiasis in that state than in any other state considered in the Survey.

In order to establish the fact that amebiasis is really a public health problem in this country it is necessary to prove that *Endamoeba histolytica*, the cause of this infection, is a pathogenic parasite; that it is present in a significant proportion of the population; and that its presence endangers the health of the individual harboring it. All of these postulates have been fully demonstrated. There is no doubt regarding the pathogenicity of the parasite; the evidence is conclusive that approximately 10 per cent of the population of the United States harbor this parasite; and that at least 50 per cent of individuals harboring it present symptoms caused by it; and that, even in those who present no symptoms, there is tissue invasion, and symptoms may develop at any time, or an amebic abscess of the liver may occur in symptomless individuals. In view of these facts it must be admitted that amebiasis is a real public health problem in the United States and deserves careful consideration by all health departments in regions where infections with *E. histolytica* are known to be present in significant numbers.

Owing to the comparatively large number of individuals that have been found infected in many localities; the difficulty of diagnosing the condition, which must depend upon demonstrating the parasite; and the expense involved in examination and treatment; the pre-

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vention of amebiasis is a very complex problem and one that must be handled variously in different localities and under different conditions.

We know that the cysts of *E. histolytica*, the usual transmitting agents, may be transmitted from man to man through a contaminated water supply, either public or private; through the ingestion of contaminated food or drink, such contamination usually being due to infected food handlers; through flies that have fed upon contaminated material and, in turn, have contaminated food or drink by contact or by their droppings; and through the use of human excrement in the fertilization of garden products. Any program looking toward the control of amebiasis must embrace all of these methods of possible transmission and, fortunately most of them can be controlled without undue expense or labor.

As the recognition of *E. histolytica* is absolutely essential before a diagnosis of amebiasis is possible, the first step in the control of this condition consists in the training of physicians and laboratory technicians in the differentiation of this species of pathogenic ameba from the four other species living in the human intestine, all of which are nonpathogenic, so far as known. I believe that the difficulty of differentiating *E. histolytica* from these other amebae has probably been exaggerated, but it is true that one must have considerable experience in the study of the parasitic protozoa of the intestine in order to make the differentiation. It is believed, however, that any well trained laboratory technician or physician trained in the use of the microscope should be able to differentiate this ameba after several days of personal instruction by a qualified instructor and from 5 to 6 weeks' practice in the microscopical examination of the feces and a careful study of the amebae present. Staining methods are also available that make the recognition of *E. histolytica* a matter of little difficulty after one has been properly instructed in their use and in the morphology of the ameba when stained by these methods.

The first step, then, in a program for the control of amebiasis, is the training of a sufficient number of laboratory workers so that they may be available for the examination of material in regions where the infection is prevalent. Such trained technicians should certainly be available in all city, county, and state health laboratories, and to these laboratories should be forwarded specimens for examination obtained during surveys or from the practising physician. Unless such trained laboratory technicians or physicians are available it would be foolish to undertake any control procedures as we would not know whether or not control measures were necessary in any given locality.

The next important essential in the control of amebiasis is to make this infection a notifiable disease, and in doing so, that the physician be thoroughly acquainted with what is meant by the term "amebiasis." By the term "amebiasis" is meant infection of man with *E. histolytica* without regard to the presence or absence of symptoms of such infection. The term includes cases of amebic dysentery, or diarrhea; of amebic abscess of the liver or other organs; of gastrointestinal symptomatology other than diarrhea or dysentery, and it also includes all individuals presenting the organism in their stools but who have no symptoms of the infection, the so-called "carriers" of *E. histolytica*.

In selecting a nomenclature that would be satisfactory in reporting cases of amebiasis, that recommended in the *Standard Classified Nomenclature of Disease* is considered admirable for the purpose. Under the general term

"Amebiasis" is included amebic infection of any organ of the body, the organ being specified, while separate designations are provided as follows: amebic abscess of brain, liver, or lung; amebic colitis; amebic hepatitis; amebic proctitis; *Amebiasis cutis;* and amebic carrier state. In reporting cases of amebiasis these terms should be employed, if possible, and amebic infection elsewhere in the body than indicated by these terms should be reported as amebiasis, signifying the site of the infection.

It is unnecessary to state that unless amebiasis and its complications are made reportable conditions any system of control of this infection is impossible, and it is certainly true that the lack of such a requirement is responsible for much of our ignorance of the extent and importance of the infection. I believe that if all cases of amebiasis now being diagnosed in this country were reported we would be greatly surprised at their number and importance, from the standpoint of the health of our people, especially in the southern states.

The control of amebiasis can be greatly assisted by the education of the public regarding the importance of this infection and the methods of transmission, as well as those which have been found effective in preventing transmission. Public education is an important part of the program of control, and this is ideally accomplished through publications issued by local or state boards of health. Such publications should include the statement that amebiasis, including amebic dysentery, is not a tropical infection, as is generally believed, but is very prevalent in this country and that, even though symptoms of the infection may not be present, grave complications, as amebic abscess of the liver, may occur. The part played in transmission by symptomless carriers of the infection should be stressed, and the simple hygienic rules which serve to prevent such transmission should be emphasized. The importance of the food handler, either in the home or in public eating places, in the transmission of this infection should be explained, and the fact that if one member of a family is found infected with *E. histolytica* other members are also apt to be infected. Personal hygiene as a valuable prophylactic method should be emphasized and the great importance of a thorough cleaning of the hands before handling food or eating, as well as after the use of the toilet, should be emphasized. It should be stressed that if these very simple hygienic rules were strictly observed by all who handle food, amebiasis would probably cease to be a public health problem in well sanitated localities, as our larger cities and towns. The public should be informed that amebiasis is a strictly preventable infection and it is believed that the education of the public regarding it is a most valuable part of any program looking toward the control of the infection.

In view of the experience gained in the study of the extensive epidemic of amebic dysentery which occurred in Chicago, in which cross-connections between the sewer and the water supply of the hotels concerned was determined as the source of the infection, the inspection of the plumbing of public buildings and hotels becomes a part of a program for the control of amebiasis. Such inspections should be made by properly trained sanitary engineers (as it is often difficult to locate such cross-connection), and should not be trusted to the usual sanitary inspector unless he has been well trained in sanitary plumbing. Just how frequently amebiasis is transmitted in this manner is unknown, but the program of control should include such inspections and the laws prohibiting such cross-connections should be rigidly enforced.

The protection and sterilization of water supplies are important parts of a control program for this infection. It has invariably been noted that, in regions where amebiasis was frequently encountered, the installation of a properly constructed and guarded water supply system has been followed by a great decrease in the number of infections with *E. histolytica*. Water is of little importance as a transmitting agent in towns or cities having such a supply, except in instances such as occurred in Chicago, where a cross-connection between the supply and a sewer caused an epidemic of amebic dysentery. Filtration through filter beds removes the cysts of this ameba and renders the water safe so far as transmission is concerned. In rural districts, however, where families depend for their water supply upon wells, springs, or streams, and where sewage contamination is possible, such water may transmit the infection through the cysts being washed into the source of the supply, and the control of such conditions becomes a part of a control program.

The proper disposal of human feces is also an important part of a control program and should be carefully investigated in regions where amebiasis is common. The laws forbidding the use of human excrement for the fertilization of vegetable gardens should be strictly enforced, and if such laws do not exist they should be enacted and enforced. The use of the sanitary privy is just as important in the control of amebiasis in rural communities as in the control of hookworm or other parasitic infections, and the enforcement of laws or regulations regarding the sanitary privy and those forbidding indiscriminate defecation in the vicinity of human habitations, or near possible sources of a water supply, becomes a necessary and important part of a control program for amebiasis.

The prevention of fly breeding and the protection of food from flies should likewise form a part of the control program. It has been demonstrated beyond question that the cysts of *E. histolytica* may live in the intestinal tract of the fly for as long as 48 hours and that during this time the excrement of the fly contains viable cysts which may be deposited upon food, thus contaminating it and spreading amebic infection. In addition, flies may carry viable cysts of the ameba upon their feet and thus contaminate food should they walk over it in feeding. Cockroaches have also been found capable of transmitting the infection.

The detection of infected food handlers should form a part of any program for the control of amebic infection. Efforts have been made in some quarters to belittle the importance of infected food handlers in the transmission of amebiasis, but the fact remains that it is impossible to explain the transmission and the persistence of this infection in well sanitated districts in any other way, while the frequency with which familial infections with this parasite occur, in which the cook or other person preparing and handling the food for the family has been found to be a carrier, adds to the evidence of the importance of this method of transmission. Where there is an impounded, filtered water supply, where sewage is properly disposed, and where sanitary plumbing exists, the transmission of amebiasis must be almost entirely due to contamination of food and drink by food handlers infected with *E. histolytica*. If this were not true amebiasis would long ago have disappeared from our towns and cities.

It has been urged that the examination of food handlers for this parasite is not practicable because of the number of such individuals and the expense involved. It is very easy to recommend that all food handlers in our pub-

lic eating places and hotels be examined and those found infected with *E. histolytica* isolated and properly treated, but when one considers what is involved in such a recommendation when applied to a large city, it must be admitted that, while ideal, such a procedure would not be possible owing to the time involved; the great expense attending the examination and the treatment of the infected; and the loss of time and money to the infected individual and his employer. While all this is true, the examination of food handlers is practicable in many localities, owing to the small numbers involved, and certainly in our smaller villages and towns, it is feasible to examine all the food handlers in public eating places for this infection and to eliminate their infection by proper treatment. While it is best to forbid infected food handlers to pursue their occupation until their infections are eliminated, this is not absolutely essential, for the food handler may be given treatment while still pursuing his occupation, and he can be warned that he is a danger to others and instructed as to the precautions he may take which will prevent the transmission of amebiasis by himself while he is undergoing treatment. Likewise, if a case of amebiasis is discovered in a family, it is perfectly feasible to examine the other members of the family and, if any are found infected, to treat them. Certainly the control of amebiasis will be greatly assisted if as much as is possible is done in the way of the examination of food handlers and the treatment of those found infected.

The detection of carriers of *E. histolytica*, aside from those handling food should be included in a program for the control of amebiasis and as much should be accomplished along this line of attack as is possible. Owing to their great number it is obviously impossible to detect all carriers, as this would entail the examination of the entire population of the country, but the laboratory examination of the feces of all individuals in families in which one member has been found infected, and of as many as possible of the population in localities where amebiasis is frequently encountered, or where numerous acute amebic infections are occurring, should be attempted by the health authorities. When funds and trained personnel are available surveys should be conducted to determine the incidence of amebic infection in regions where such infection is known to occur, or in other regions where it probably occurs, and infected individuals should be treated and instructed regarding the nature of the infection and the methods of transmission. The inmates of public institutions, such as hospitals, orphan asylums, insane asylums, etc., should be examined, as in such institutions the incidence of infection with *E. histolytica* is frequently excessive, especially in insane asylums.

What may be accomplished in the examination of a population for infection with *E. histolytica* is well illustrated by the results obtained by Seckinger (1936) who, in villages in rural Georgia, examined the members of 69 families, including 290 individuals, and found 162, or 55.09 per cent, infected. In several families the infection rate was found to be as high as 90 per cent, and in one family of 11 members, 10 were found positive. Of these, 1 suffered from dysentery at the time of examination, in 5 others symptoms of amebiasis were present, while in 4 there were no symptoms or history of symptoms.

I have endeavored to outline briefly the measures that should be included in a program for the control of amebiasis. The administrative details connected with such a program must, of course, be worked out by the city, county, and state health boards of the states in

which such a program is adopted; but it is believed that if proper coöperation is obtained between the organizations concerned, a program for the control of this infection is feasible and could be conducted without too great an expenditure of money.

Summarizing what should be included in a program for the control of amebiasis by health departments, such a program should include the following, to be participated in by city, county, and state health departments as the situation indicates:

1. Making amebiasis a reportable condition, using a nomenclature for reporting it similar to the one now recommended in the *Standard Classified Nomenclature of Disease.*

2. The training of a sufficient number of health laboratory workers in the recognition of *Endamoeba histolytica,* the cause of this infection.

3. The education of the public regarding the infection and its importance as a public health problem, by means of printed information, radio talks, etc.

4. A careful inspection of public buildings, hotels, restaurants, and other public eating places as to the presence of possible cross-connections in the plumbing system between sewers and the water supply.

5. The protection and sterilization of water supplies in rural districts and villages or towns where an impounded and filtered water supply is not available.

6. The proper disposal of human feces, and the enforcement of regulations regarding this matter.

7. The examination of food handlers for the detection of infected individuals and their proper treatment after detection, in so far as is possible with the facilities at hand.

8. The detection of carriers of *E. histolytica* by means of surveys of the population in localities where epidemics of amebiasis may occur or where it is believed that such infection is responsible for illness.

9. The prevention of fly breeding, and the protection of food and drink from flies and other insects, such as cockroaches.

Fortunately, most of the items included in this program are already taken care of by present regulations of our city, county, and state boards of health, and all that is needed is to enforce such regulations; but much remains to be done, so far as the control of amebiasis is concerned, in training personnel in the recognition of *E. histolytica;* in educating the public regarding the importance to health of infection with this parasite; and in the examination of food handlers and other individuals in localities where infection is known to exist or in others where it is suspected of being present. These are the most important parts of a control program and until something is done about them amebiasis will continue to be a public health menace in the United States.

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National Health Survey

THE Division of Public Health Methods of the National Institute of Health, U. S. Public Health Service, Washington, D. C., released on January 17 preliminary reports of the National Health Survey of 1935–1936.

Bulletin No. 3 describes the findings regarding illness and medical care in relation to economic status.

This comprehensive survey was conducted by the U. S. Public Health Service with the aid of financial grants from the WPA. These findings are based on a house-to-house canvass of some 800,000 families, including 2,800,000 persons in 84 cities and 23 rural areas of 19 states. The survey was made during the winter of 1935–1936, and the total survey population was so distributed as to give a sample representative of cities in the United States according to size and region.

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PUBLIC HEALTH EXPANDING

ONE does not have to watch the literature too attentively to discern a growing interest in public health and to detect the recognition by the profession that preventive medicine and public health are expanding—that constantly new items are entering into the practical field, and from the very nature of things are demanding more and more attention. For many years, and too much so even today, public health in the mind of the average person has been considered as referring chiefly to the infectious and contagious diseases. The medical profession has not yet gotten away from this idea entirely. It is true that even now this group of diseases causes more than half of all deaths and probably even a higher proportion of illness. We are constantly achieving triumphs in the prevention of preventable diseases the cause and manner of spread of which we know. We are even from the practical standpoint improving the outlook of certain other diseases; cancer for example, the cause of which we do not know, and which is certainly not contagious in the ordinary sense of the term.

Mental Hygiene—For several years we have had a group in our Association interested in mental hygiene, and some excellent papers have been given, most of which have found their way into our *Journal*. At our recent meeting the importance of this subject was stressed, and one thoughtful paper expressed the opinion that there was a distinct epidemiology of mental disease; another held it was a function of health departments; another spoke of the training of nurses in order to help mothers in the prevention of mental twists; while a fourth spoke of the achievements and possibilities. There can be no question of the importance of this subject. Since 1910 there has been an increase of 122 per cent in the number of patients in mental hospitals, although the population of the country during that time has grown only 40 per cent. Some of this increase in the number of patients is due to better facilities, to a partial overcoming of the idea that mental trouble is a disgrace, but there is some indication also that the actual number of mental cases is increasing.

The first child guidance clinic in this country was established in 1909, but for children and adults there are now 683 such clinics in the United States, and 53 in Canada, serving more than 12,000 new cases annually. So far it is difficult to evaluate the preventive effect of these clinics, but there is some evidence that they are doing much good.

During the past 6 years, some 36 medical schools in this country and Canada have introduced or improved their facilities for clinical instruction in psychiatry, the recognition of a need which was introduced to us largely less than 30 years ago, although insanity and other types of mental trouble have been with us throughout all time.

Accidents—Perhaps the next most urgent demand for consideration as belonging to public health is the matter of accidents, which have been grouped under the title, "External Causes of Death" in the *International List*. Such a prominent place has been taken by automobile accidents that most of us have almost forgotten that there are other causes of accidental death. For 1937, the number of deaths from automobile accidents is computed at approximately 37,000 and the number of injuries more or less severe at about one and a quarter million. For the last year in which we have accurate statistics, the death rate was 24,500 for persons 15–64 years of age, and 4,300 for children under 15. It is well said that "This wholesale slaughter is without parallel outside of America." America, of course, leads in this slaughter. Many factors are concerned in this question; mental capacity, habits, the use of alcohol, etc. Whether we wish it or not, the matter has been forced upon us as a public health problem.

On the other hand, railroad accidents have decreased and, as far as passengers are concerned, have almost vanished. Too many employees still meet with accidents and death. Indeed, some of the accidents such as those at grade crossings, for example, are generally due to the drivers of automobiles.

Suicide—Every year some 20,000 people in the United States commit suicide, meaning that of every 1,000 white males born, 18 will sooner or later take their own lives, against 5 for females. Again, many factors come in here, some of which belong distinctly under the public health aspects of mental hygiene. As Dublin and Lotka [1] express it, "Suicide is indicative of a badly integrated personality . . . the end result of personal maladjustment and frustration which can often be avoided were the individual in question helped, before it is too late, to solve his conflicts in a more constructive fashion."

Homicide is another cause of death which does not exercise us as a public health matter as much as it should. In a paper read before our Annual Meeting,[2] on October 6, 1937, it was clearly said, "Homicide is a preventable cause of death."

Space does not permit a discussion of the various other types of accidental death, such as falls, burns, firearms, mining, machines, electricity, poisonous gas, etc. It must be clearly pointed out, however, that all of these deeply concern the vital statistician, and vital statistics is the bookkeeping of public health. It is impossible to avoid the conclusion that some, if not all, of these matters deserve inclusion under the general title of public health.

Cancer—Cancer is definitely not contagious or infectious in the ordinary sense of these terms, yet it has always been a question which loomed large, and of necessity has engaged the attention of public health workers. Its apparent increase has led to considerable discussion. With the prolongation of the span

of life which has taken place chiefly through preventive measures in the early years, more people are reaching the age when cancer becomes more prevalent. From every standpoint cancer deserves to be considered a public health problem. While it is true that a large and well managed journal is devoted to this subject, and that there are a number of Funds devoted to the study of cancer from every aspect, the Annual Meetings of this Association should have more papers on cancer, discussing the advances made, our knowledge of it, and its prevention by such measures as are known to be effective.

Diabetes is another disease which is not contagious. It is attracting more attention each year, and papers have been given to us concerning it, one of which is now in preparation for publication.

Housing and Nutrition—In our sister country, England, housing and nutrition appear to be the two matters which are attracting the most attention. Both of them have unquestionably a tremendous effect upon the health of the public, to say nothing of our general well-being and efficiency. At our recent meeting, a symposium was presented on the Hygiene of Housing, which included, of course, heating, ventilation, lighting, etc. This will be published in the March issue. We can remember when the matter was taken up in this country largely by Mr. Veiller, in connection with tuberculosis, and a clear demonstration was given, especially for New York, of the bad effects of the tenement house system as it then existed, on the incidence of tuberculosis. Heating and ventilation engineers and architects have perforce continued some excellent studies, but discussions of these matters as public health problems have not been as active as they should have been.

This discussion has taken into consideration what seemed to be the most immediate and most urgent needs. Others could well be added. Several diseases which interest the vital statistician and the health officer and which have been in the past considered as non-contagious are now believed to be partly or in whole caused or aggravated by certain infections, obscure or otherwise.

The list of items heretofore and at present included under the general term of public health, has grown and must grow. The term might well be expanded to include all causes of disability and death other than those generally called—often mistakenly so—natural causes. Our Association has expanded from a comparatively small group made up of medical officers of health into an organization which now has 10 sections, with several others clamoring for admission. We believe that our organization must expand and that our official organ, the *American Journal of Public Health*, will have to expand along with the Association and the demands upon it.

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AIR-BORNE INFECTION

IN the early days of bacteriology the air was regarded as being a frequent vehicle for carrying infection. As early as 1861, Pasteur demonstrated the presence of microörganisms in the air of various places, the number varying with the locality. Experiments were carried on by Lister, Tyndall, Miquel, and

others, and many will remember that one of the first publications on bacteriology in America was "Dust and Its Dangers." Lister guarded against the suspected dangers of air by operating under an antiseptic spray and covering the wound, after operation, with many layers of dressings. It was not very long, however, before experiments indicated that the air played a minor part in the infection of wounds, and attention was turned to cleanliness, sterilization, and antiseptics.

Nearly 25 years after the experiments of Lister and 10 years after those of Tyndall, Flügge, having failed to recover organisms from the mouth and nose on plates more than a few feet from the faces of persons coughing and sneezing, advanced the theory of "droplet infection." Observations such as those made at the Hospital of the Pasteur Institute, the Hôpital des Enfants Malades, and by Grancher, all in Paris, seemed to prove that infection through the air occurred in a minimum percentage of cases.* Belief in air-borne infection became practically eliminated, though there were always certain diseases, notably smallpox, measles, and influenza, that did not seem to fit into the prevailing ideas. Such terms as "volatile" and "diffusible" were applied to some viruses.

Articles on the subject appeared fairly often and experiments were carried on, especially concerning the possibility of the air-borne transmission of tuberculosis. Guinea pigs placed in the ventilating shafts of hospitals for consumptives became infected in some instances, but even when these animals were injected with dust collected in such shafts, positive results were surprisingly few (2.7 per cent of 74, London Hospital for Diseases of the Chest, Heron; 1 of 16, from a military hospital, Kirchner). Flügge had entirely negative results in experiments on guinea pigs exposed to the inhalation of such dust. Cornet, 1899, excited much interest when he demonstrated tubercle bacilli in dust from hospitals and private houses in which there were phthisical persons, and succeeded in infecting 46 of 48 guinea pigs by exposing them to dust grossly polluted with dried tuberculous sputum.

Again more than 25 years passed without very active studies of the question. Interest in the matter has been revived and a number of recent investigations have shown the existence of specific germs in the air of hospital wards. For example, the air in four scarlet fever wards was found to be heavily infected with the *Streptococcus pyogenes,* and in one the types corresponded to those found in the patients. The organisms were widely spread and the types identified were often found away from the vicinity of patients infected with these particular types.[1] At the National Institute of Health, psittacosis virus was apparently conveyed by the air from the basement to the upper floors.[2]

For some 5 years, studies on air-borne infection have been going on at Harvard.[3] New methods and new apparatus have been designed.[4] It has been shown that the droplets described by Flügge do not necessarily fall to the ground within a short distance. As their size becomes smaller by evaporation they fall more and more slowly, and finally become so minute that their behavior in air is comparable to particles of smoke rather than to the droplets described by

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* At the Hospital of the Pasteur Institute the wards open into a common corridor. In 2½ years 2,000 patients were treated, including 524 cases of smallpox, 443 diphtheria, 126 measles, 163 erysipelas, 92 scarlet fever, 166 non-diphtheritic sore throat. There were 6 cross-infections—4 smallpox and 2 erysipelas.

At the Hôpital des Enfants Malades the beds are separated by partitions. With 5,017 patients there were 7 cross-infections—6 measles and 1 diphtheria.

Grancher has two wards with no partitions, only wire screens as reminders to the nurses. In 10 years he had 115 cross-infections of measles—7 of scarlet fever and 1 diphtheria.

Flügge. In experimental apparatus it has been shown that they persist in diminishing numbers for hours and even days. The dried residues of these infected droplets, called "droplet nuclei," remain suspended for a long time, and may be carried long distances from their source. Droplet infection is essentially localized and concentrated, but that by droplet nuclei is more dispersed and dilute.

The viability of a number of the germs contained in these droplet nuclei has been determined. Generally speaking, 4 organisms characteristic of the upper respiratory tract—pneumococcus type I, *B. diphtheriae, Streptococcus haemolyticus* and *Streptococcus viridans,* are found decidedly more viable than the intestinal group of organisms, having been recovered after 2 days. Experimentally, *B. coli* put into the water of a 1 room air conditioner in the basement of the Harvard School of Public Health, which does not have mechanical ventilation, was recovered from the ends of every corridor of a 3 story building, showing that infected droplet nuclei can be dispersed by ventilating currents throughout a building.

The expulsion of infected droplet nuclei by sneezing has also been proved. Bacterial samples collected in the centrifuge [3] on blood agar tubes showed thousands of alpha streptococci and *M. catarrhalis.* It is well known that the diseases spread by the upper respiratory tract and taken into the body through the same tract are those hardest to control. In 1933 more than 85 per cent of the deaths from infection and parasitic diseases in the United States were from diseases in which the usual portal of entry is the nasopharynx, and in the same year the incidence of measles was the highest of all diseases, while influenza came next. It is generally admitted that nasopharyngeal infection is practically universal.

Those who carried out the studies mentioned hold that the burden of proof of air-borne infection, which has until this time rested on bacteriology, has been lifted, and it is now necessary for epidemiology to disprove the fact of air-borne diseases.

It is evident that a reëxamination of some of our beliefs is necessary. It remains true that direct evidence of air-borne infection is, on the whole, lacking except in special cases. Without questioning the experimental data brought forward, which we believe to be of great importance, it seems that infection resulting in clinical disease would be more widely spread than is apparent. In 1918–1919, during the pandemic of influenza, one of the most contagious diseases, the percentage of the population affected was relatively small (11 per cent).

The experience of the English with "bed-isolation" wards indicates that they are as effective as cubicle isolation. In these wards a variety of diseases are treated side by side, though acute cases are separated by at least 12 feet, and strict "surgical asepsis" is insisted on. In the British Navy good results are believed to have been obtained in checking infection in meningitis by making the men lie alternately head to feet. Such facts point to the importance of direct contact rather than to the air as a vehicle.

Further investigation of this important problem will be welcome.

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DR. LAWRASON BROWN

THE death of Lawrason Brown on December 26, 1937, deserves more than passing notice. He was a Life Member and Fellow of this Association. Breaking down with tuberculosis when he was a medical student at Johns Hopkins Medical School, he spent most of the rest of his life at Saranac Lake where he was a student and assistant under the late Dr. Edward Trudeau.

He was a member of many learned societies. His bibliography was extensive, but perhaps his chief contribution was to *Osler's Modern Medicine*. Indeed, when this book was projected the publishers made a stipulation that the chapters on tuberculosis should be written by the men at Saranac Lake.

In addition to his specialty, Dr. Brown took a great deal of interest in public health generally, concerning himself over pure milk for his community, and if the writer's memory is correct, served for several years as Health Officer of Saranac. This *Journal* is indebted to him for a number of masterly reviews of books on tuberculosis. He had not only excellent training, but rare good judgment, and his judgment of books was sound always.

His personal character was most attractive. No one knows the many kindnesses he did more or less secretly, in which he followed the lead of the founder of Saranac Sanatorium, Dr. Edward Trudeau, who at the end of a day had often given away more money to patients than he had taken in. It is needless to add that Dr. Brown had hosts of friends in this country as well as in Europe who will mourn his loss not only personally, but as a master in his knowledge of tuberculosis. We extend to his wife and family our most heartfelt sympathy.

JOUkNAL POLICY

IT is good business for an organization to take stock of itself now and then, especially a successful organization with no urgent reason for so doing. A degree of success sometimes acts as a sedative to initiative, instead of energizing directors and staff to greater aggressiveness and progress. When that happens the policy of laissez faire prevails, former perception of opportunities for expansion and profit, whether financial or professional, is dulled and eventually retrogression begins.

This philosophy of critical examination and appraisal of basic structure, of objectives, of enterprises and services, has served the American Public Health Association well. The attitude of its governing boards and of its members has always been that of a father of our acquaintance who examines the scholastic record of his honor-roll child every month with the comment, "Very good, but room for improvement." Such an attitude implies always that the ability to do better exists and that a little harder work, a bit more thought, a slight shift in emphasis will assure another advance.

Stock-taking of the standing committee organization of the Association last year led to the conclusion that, effective as the five committees had been, administration would be simplified if two—Fellowship and Membership, and Meetings and Publications—were dissolved. Accordingly, these committees were abolished and most of their responsibilities were centralized in the executive office. Celerity of decision and smoothness of operation have been immediate results. Two major duties of these committees required more formal treatment. The pre-

liminary passing upon qualifications of applicants for membership and fellowship, formerly the authority of the Committee on Fellowship and Membership, was placed in the hands of a new standing Committee on Eligibility. The *American Journal of Public Health*, previously under the jurisdiction of the Committee on Meetings and Publications, will in future be directed by an Editorial Board especially created for the purpose. Dr. Mazÿck P. Ravenel continues as Editor.

The *American Journal of Public Health* is a going concern. Under the editorship of the past fifteen years, it has shown a steady and healthy growth. It is regularly abstracted in the leading health journals in Europe and America. The circulation of this issue is the largest in its history—close to 8,000. There can be nothing very wrong with a magazine that holds its readers year after year and adds consistently to its circulation. Sustained reader-interest, to use the expression of the circulation manager, bestows the accolade of approval on any periodical, without benefit of scroll or testimonial. And sustained reader-interest is measured by nothing under the sun but a straight numerical count of subscription renewals. The *Journal's* record in this connection is the envy of more than one publisher we know.

The Editor, the Executive Board, the business office do not want to stand on records, however. "Very good, but room for improvement." Therefore, when the organization stock-taking made necessary a different division of publication responsibilities, it was welcomed as an opportunity to check up again on *Journal* direction and scope to make sure that no possibilities for usefulness to the public health profession were being overlooked. The Editorial Board had served long and well, but its 15 members were scattered geographically, making anything but communication by mail out of the question except at rare intervals. Some of the Editor's tasks were tedious, added to him by accretion rather than by purpose. Finally, after weeks of discussion, in which all concerned participated, a plan emerged which promises to be generally satisfactory. It involves an Editorial Board of five, all within easy access of the executive office, and consequently available for frequent consultation individually and collectively. The Chairman is the Executive Secretary, who also serves as Managing Editor, and the other members are: Prof. Ira V. Hiscock, Kenneth F. Maxcy, M.D., Arthur P. Miller, C.E., and Harry S. Mustard, M.D.

This group and the Editor will take the *American Journal of Public Health* as it now is and attempt to make it an even more effective instrument for the dissemination of authentic public health information, more thoroughly representative, if that is possible, of the interests now alive and those coming to birth in the public health profession. Before anything is done to effect what they all hope will be improvements, suggestions and comments from those whom the *Journal* is designed to serve will be most heartily welcomed.

WHAT WE OWE TO VETERINARY MEDICINE

THE December number of the *Journal of Comparative Pathology and Therapeutics*, founded by Sir John McFadyean, is dedicated in honor of its founder and editor, who is now 84, but still active physically and mentally. Five men of international reputation, contemporaries of Sir John, were asked to contribute short articles each from his own particular viewpoint in regard to the profession and Sir John's contributions. They include Bulloch of England, Leclainche of

France, von Ostertag, Schmaltz, and Mohler, Chief of our Bureau of Animal Industry. Americans, and especially the veterinary profession in America, owe much to Sir John.

There are few men who have covered so much ground and covered it so well as Sir John has. Not only has he devoted himself to pathology and therapeutics, as the title of the journal indicates, but he has written also on biochemistry, immunology, parasitology, and other subjects. He has studied anthrax, blackleg, cancer, glanders, hog cholera, epizoötic abortion, pneumonia, tuberculosis, and other subjects, mainly from the animal standpoint. It is not too much to say that his studies and writings have guided much of the thought and work, especially among veterinarians, in the United States.

He has always paid particular attention to prophylactic measures. He was one of the earliest in the field of preventing contamination of milk by pathogenic organisms. Curiously enough, England is behind America and other parts of the world in the control of milk, in spite of the wonderful leadership she has had.

Sir John has done a great deal of work on animal tuberculosis and its relation to man. At the London Congress on Tuberculosis, following Koch's astounding claim of nontransmissibility from cattle to man, Sir John and the writer were selected to speak before the general meeting to combat the ideas advanced by Koch. Again, America leads in the eradication of bovine tuberculosis, due in this country almost entirely to the enlightened vision of Leonard Pearson, now carried on by our Bureau of Animal Industry under Mohler, but Pearson's plans were founded largely on the work and studies of Sir John. The studies of Sir John on glanders are generally credited as being responsible for the almost complete eradication of this disease from America.

The editor of this *Journal* has for years advocated a closer relationship between the veterinary and medical professions and has done as much as he could to bring more veterinarians into the American Public Health Association. At our recent meeting in New York we had a number of valuable papers from veterinarians. It is our hope that our relations will grow closer and closer because every year brings the proof of the close relationship between animal diseases and those of man.

We join with England in doing honor to Sir John and wishing for him many years of usefulness and happiness.

PUBLIC HEALTH EDUCATION*

Read It Before You Print It—What reads crystal clear to the writer may read quite differently to some other person. Of course the health officers were not responsible for the implication in this quotation from a New Jersey newspaper:

> No explanation was given as to how the malady was introduced into the village, although it was said Federal and State health officers have visited the place.

To guard against double meanings, and other forms of confused writing, try to hold your copy on the desk for one day at least—a week is better. Then re-read it before putting it to use. Incidentally such a procedure would be likely to cut down the cost of "author's corrections" of printed matter.

"Your Health" Broadcasts Continue—And it is not too late to consider their introduction into schools, or to take up the organization of listener groups of mothers, P.T.A. members, church or women's club groups.

The program is broadcast every Wednesday from 2:00 to 2:30 P.M., eastern standard time, over Red network of NBC. For details about school or group use of the broadcasts write to Dr. W. W. Bauer, A.M.A., 535 N. Dearborn St., Chicago, Ill. Dr. Bauer will send a list of topics and of stations.

Health groups and others interested should prod the local stations so as to offset any possible commercial competition for the time.

How It Has Been Written—Probably some of our readers would like to consider varied forms for presenting a health message.

The first example is from New Mexico, a newspaper column written by Charles M. Cree, Director of Public Health Education in the State Bureau of Public Health:

It is funny
That some people
Who profess
To love their
Children
Will delay and
Delay if one
Of the family is
Sick before
They call in
The Doctor
And sometimes
It is so
Necessary for
The Doctor to
Come at once
I mean right now
If he is to
Do any good
And when the
Doctor is finally
Dragged in and
It is too late
For him to
Help a great deal
The righteous
Parent will
Claim the M.D.
Is a bum doctor
Because he wants to
Shift the blame
From himself
At any cost
So the poor
Physician is often
Made the scapegoat
For the parent's
Foolishness

Expansion in Canada—At the 1937 meeting of Canadian Public Health Association one of the resolutions expressed

> . . . its appreciation of the action of the Dominion Government in strengthening the Department of National Health by . . . the restoration of the divisions of Publicity and Health Education, and Maternal and Child Welfare . . .

"Musclebound with Caps"—"The Proofroom" is a valuable and definitely interesting department in *Inland Printer* (Chicago, Ill.), a leading journal of the printing industry. Recently a correspondent wrote about a bus card that

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York, N. Y.

. . . began about like this: "Abraham Lincoln, When President of the United States, Before The Day Of The Auto"—every single word starting with a capital letter. Would you call that a strong style?

Said Editor Teall in reply:

Decidedly not! It is weak—spotty, like a case of measles. The capitals lose their character when used so undiscriminatingly. They are like cusswords overdone. There is nothing weaker than "strong language" dished up too liberally.

Capitals are used to mark off the start of a new sentence, and for proper names and titles of respect. In headlines or any sort of display matter, they should be used sparingly, on main words only. On words like "and," "of," "the," they are completely out of place.

There is no inherent strength in capital letters. They are like italics, used for contrast; the capitals with lower-case, and the italics with Roman. Text all in caps is not strong; it is actually weaker than the combination of upper- and lower-case. Try covering half the line, and see how hard it is to "get."

The fewer capitals we use, the stronger are the ones we do employ.

Interpreting Your Illustrative Cases—To publicize health agency cases is a simpler job than to explain via case stories much of the work of family and child care agencies. But it is easy to get into the much quoted "rut"—presenting illustrative cases in routine fashion. Moreover some of the less tangible phases of health service fail to get into case stories. This is difficult writing.

"The Case Worker Interprets" is a mimeographed pamphlet reporting what 9 agencies or groups of agencies did toward better case presentation. Every division or bureau, or individual staff member who supplies case material, in addition to those who do the writing, speaking, or broadcasting, should be interested. Copies could be circulated. A staff meeting could discuss the projects to consider possible adoption of one of them. Several of the projects offer possibilities for joint participation by the local or state group of health agencies. Joint study and participation with a group of family and child care agencies may be considered.

Get "The Case Worker Interprets" from Social Work Publicity Council, 130 E. 22d St., New York, N. Y. *25 cents;* special rates for quantity lots.

Holiday Greetings—In Texas a holiday greeting sheet accompanied the regular mailing of ***Bulletin*** of the State Department. Printed in green, red, and black, with the face of Dr. Cox inside the wreath, and three paragraphs of which here is one:

It is impossible for me to write a personal letter of thanks to the thousands of Texans who have assisted the cause of public health during the past year. Please accept this substitute. I wish that I might take you by the hand and say "Thank You."

Ohio Public Health Association used a slip for envelope enclosure. Large size Christmas Seal, and "Merry Christmas and Happy New Year," with the name of the Association.

Connecticut State Department mimeographed a sheet bearing a typographical Christmas tree. The text started with these words:

Health is the supreme gift for 1938 which the State of Connecticut plans for all its citizens from the babe in arms to its oldest residents.

Next year when more of you may be sending greetings it may be well to remember that to get an interested reading you should not use all capital letters if your message includes more than a half dozen or so words. Some may wish to point out that many health gifts await the readers in the course of the year, subject only to their interest and care, and that the department or the association will continue to remind them of what is theirs for the taking; for others less fortunate, service will be rendered that they too may claim health gifts. Some may

choose to place emphasis in one direction. Connecticut singled out diphtheria and pneumonia.

Fifty years ago hearts were saddened in many homes throughout the state because 2,863 infants were missing from their Christmas festivities. This year the family circles are lacking only 770 infants, and 2,093 more infants are sharing in the Christmas fun than would have, had the health conditions of fifty years ago prevailed.

Health Education First by Television—"The first successful transmission of a public health message by television was made on Oct. 7, when the New York State Department through the coöperation of the National Broadcasting Company" gave a demonstration before a group of health authorities.

A sound motion picture, "Public Health in New York State," prepared by the department's Division of Public Health Education, was projected in the television room of the RCA building, and by means of special apparatus was viewed several floors away by invited guests. Addresses were given over the television system by Edward S. Godfrey, Jr., and Homer Folks . . . At the same time, the entire program was sent from the television transmitting tower on top of the Empire State Building for the general public within the receiving radius of the station.

Just as it was the first official body to use radio in broadcasting health programs, the department is the first health agency to send a motion picture film by television. In 1931 an attempt was made to send three of the department's animated health cartoons from a station in New Jersey to a receiving station outside of New York City, but was unsuccessful.

"Making Bibliographies Alive"—Public health workers have much use for reading lists or bibliographies. Life is too short, and publication is too diverse and too rapid to get along without them. But too many of such "helps" are hindrances, or at least offer little aid to the busy student or practitioner.

Several uses of bibliographies are suggested by I. M. Cooper in *Special Libraries:*

The purpose may be fourfold: To educate those who know little or nothing of the subject; to incite further specialized interest and research among students, young or advanced; to create and promote general popular interest in historical, economic, technical, commercial phases of said subject; to encourage the intelligent workers themselves toward a realization of the wide importance of and diversified interests connected with their special job.

The actual examination of listed books is essential so that the titles may be "adequately annotated."

What does adequately, here, mean? It means putting oneself in the place of the prospective user of the bibliography and comprehending what he wishes to know, not what the annotator sees fit to let him know because of lack of imagination, vital interest, or printing funds. This does not mean writing an essay or being verbose; it means clear, strenuous thinking with the definite, objective service in mind. In the case of the kind of bibliography we have set out to compile it also means a flair for exciting interest in a way that will lead some to new fields and others to an enlargement of their specialization; at the same time meeting the approval of those already fully informed. Also from the point of view of the reference librarian, the research worker or the student, the annotations must prove the value of the whole as a tool in facilitating rapid service to inquirers with varying needs. What hours of futile expenditure of physical and mental energy would librarians be saved and what wear on nerves of waiting clients if annotations, when used, were adequately serviceable in eliminating material non-pertinent to the immediate call.

Not mentioned by the author, but a fair warning to our readers, is a reminder that the above is no job for a stenographer or an untrained student.

The bibliographer who wishes his tool to be "alive" cannot be a dead one himself. It is moreover necessary that he be an interpretative medium translating the material which he has brought together into a vitally important source of interest, refreshment, satisfactory verification, or detailed research.

From "One Way of Making Bib-

liographies Alive" in *Special Libraries*, 345 Hudson St., New York, N. Y. Dec., 1937. *50 cents.*

Health in Newspapers: Part 3—We reproduce about half of one weekly release in the series called "Here and There With the Health Reporter." This is supplied free to newspapers by Edward Fisher Brown, Health News Service, 22 E. 40th St., New York, N. Y.

FOR RELEASE—Oct. 11th

Health Officials Meet

GATHERED together in their common fight to lower the death rate and promote the public health, prominent Health Officers from all over the country met in New York City last week. There was held the impressive 66th Annual Meeting of the American Public Health Association. Impressive because the program was fairly bristling with the names of nationally important health officials and because of the recognized importance of their common cause.

Notable, also, was the importance attached to the use of the proper food and a better knowledge of nutrition in improving general health. Special sessions were held each day for discussions on this subject by various Committees on Foods. That plenty of fresh milk, fruits and vegetables should be included in the daily diet of every human being in order to build good bodily vigor, was stressed over and over. Addition-

In Cities of 10,000 or More—The annual directory of "Health Officers in Cities of 10,000 or More Population, 1937," appeared in *Public Health Reports*, U. S. Public Health Service, Washington, D. C. Dec. 10, 1937.

A few of the larger cities reported their chief administrative officers, among whom we note the following:

Melvin P. Iseminger, M.D., Director, Public Health Instruction, Washington, D. C.

Dorothy Yoe Kalben, Director, Bureau of Health Information, Baltimore, Md.

Mary P. Connolly, Director, Division of Health Education, and Editor, *City Health*, Detroit, Mich.

Charles F. Bolduan, M.D., Director, Public Health Education, New York, N. Y.

Would not this annual directory be much more useful if all cities reported their staff members?

Anyway, dear Health Officers, won't you get the health education people into the picture?

A Week and Six Months—"Empire Health Week" (Oct. 3–9, 1937) was planned to be a particularly spectacular affair in England,

. . . for it has been selected for the opening of the national health campaign which is to be carried on by successive stages until next March. . . . The campaign is to be divided into 5 periods. October will be devoted to a general introduction to the campaign, the keywords of which will be "Towards a Fitter Britain—Use Your Health Services," which is an effective complement to the traditional Health Week Slogan, "Self Help in Health." November and December will be devoted to the maternity and child welfare services; January, 1938, to the school medical and dental services, and the milk-in-schools scheme; and February to the tuberculosis and other services for adolescents and adults. In March, 1938, there will be a link-up with the National Fitness Council, who will draw attention to the facilities already existing for physical training and recreation, and to the further facilities to be provided under the Physical Training and Recreation Act, 1937.

Throughout these months some millions of leaflets will be issued, and posters will be displayed by local authorities; a number of meetings will be organized by local authorities which will be addressed by members of all political parties, and other ancillary methods will be adopted such as the display of films of special health interest.

"Ask at the Post Office" will be one of the dominant slogans. Every post office will display a notice reading "Particulars can be ob-

tained at the counter about the health services in this district, including the addresses of the antenatal clinics and child welfare centres, and the times at which they are open." It is suggested that the "particulars" should take the form of a leaflet headed "Health Services," which could be handed to inquirers or shown to them, and which would contain details of local maternity and child welfare services referred to in the notice, information about such matters as the way to get an ambulance, the address of the local medical officer of health, the vaccination officer, etc., and the local hospitals, with their out-patient hours. A good selection of attractive outdoor and indoor posters, traffic cards for vehicles, book marks, mounted cards and folders, suitable to the special topic of each month of the campaign will be available for free distribution through the Central Council for Health Education.

From *Mother and Child*, 5, Tavistock Sq., London, W. C. 1, England. Oct., 1937. 9d.

Not Too Old to Learn—For workers in adult health education we quote some paragraphs from "Nisi Cresco," by William McAndrew. *Journal of Adult Education*, 60 E. 42d St., New York, N. Y. Oct., 1936. *75 cents.*

Among those who have put life and hope into the service of adult education, I should like to sing a hymn of gratitude to Edward Thorndike.

Edward Thorndike is a prime antagonist of the old belief that we old chaps cannot learn anything. What he and his fellow workers have done is to overturn certain ancient proverbs of pessimism and despair. The Thorndikians have not denied the truth of the old adage that you cannot teach an old dog new tricks; they have doubted that an old man has to be considered a dog. By experiment and measurement they have shown that adults can learn anything they need to know. As I understand it, they have taken away from those who decline to exercise their minds the alibi of inability and have substituted the real reason, laziness. But laziness, as wise men from the time of Socrates have preached, is curable. The sovereign remedy for dislike of work is work.

From under Columbia University's dome, the same roof that shelters Thorndike, Walter Pitkin issues his joyful gospel: "Life Begins at Forty." It does, says Walter, if you make it. It seems to me that the proper line for us teachers of adults to take is in this direction:

"How old are you, sir?"

"Sixty."

"Good! Life begins at sixty."

"What's your age, my good woman?"

"Seventy-three."

"Fine! Life begins at seventy-three."

Who can deny that life begins with every day on which one learns something worth knowing? Who can deny that every day one can, by intending his mind to it, as Sir Isaac Newton says, learn something worth knowing?

Jeremiah Jenks, reviewing the careers of Benjamin Franklin, John Quincy Adams, Abraham Lincoln, and many others, was moved to conclude that the best years of a man's life are the last ten years. And each of us, be it noted, is living in the last ten years of his life so far.

This idea gives a needful punch to the work of adult educationists who have to contend with the suggestion, prompted by indolence, that it is too late in the afternoon to begin anything.

The remainder of the article makes the application to the educators themselves! Some time we may quote those paragraphs.

Something Has Been Started—At least we hope so. Last October the A.P.H.A. had its first "hobby show" for members, with the prospect of repeats at future annual meetings.

Now the New York City Department of Health has put on *its* first hobby show as a phase of morale building. The first announcement listed 23 entrants, and invited all to—

See how your fellow-workers spend their spare time. See samples of their fascinating collections and products. Most of the entrants will be present—and will tell you all about their hobbies at the slightest hint.

Drama and News by Radio—During the spring of 1937, as a part of its health education program,

. . . the New Haven Health Department sponsored a series of radio presentations

through the facilities of Station WICC from its New Haven studios. These broadcasts, in the form of sketches, blending the historical with the present, dealt with a variety of public health topics. Many staff members of the department as well as specialists from outside the department, participated. Among the titles of the broadcasts were "Fifty Years Ago—An early meeting of the New Haven Board of Health," "Milestones of Health," "The Story of Vaccination," "The Conquest of Diphtheria," "Stars Along New Haven's Milky Way—the Story of Pure Milk," "The Foe of Youth—Tuberculosis," "A Perfect 32—Dental Hygiene," "Pneumonia Control," "Public Health Nursing." These programs were presented at an early evening period of 15 minutes each Friday night.

The current series of radio programs began in October 1937, at 4:30 to 4:45 Friday afternoons.

The title of this broadcast is "Health—Here, There, and Everywhere." An attempt has been made to present up-to-the-minute news and comment in the broad field of public health. The material has been compiled from public health reports, medical reprints, and the daily and weekly press, edited by Paul H. Stevens, the department's Public Information Assistant, and presented in chatty items by the Health Officer and members of the department's staff.

We quote 2 of the 7 examples of these items as reported in *Health* (Dec., 1937), issued by the department:

We wonder if any of you listeners have ever heard of lipoid pneumonia? That's a funny name. Well, lipoid in medical parlance means fat. From many sources cases of fat pneumonia have been reported, usually in infants and children under 2 years. And what do you suppose has been the cause of most of these cases? Nose drops—oily nose drops. The common use of the oil nose drops in young children has been found to be dangerous because in the usual struggle while the medication is being applied to the youngster's nose some of the substance is sucked into the lung. When once the microscopic feather cells lining these air passages are soaked with oil they cannot function. The function of these lining cells is to remove foreign particles and prevent material from gaining entrance to the lung. The oil, once in the lung, acts as an irritant and starts up an inflammatory process ending in a serious long-drawn-out type of pneumonia. So you see, oil drops should only be used in children under the direction of a physician. Avoidance of self-medication is one of the first principles of good health.

Do you know that some people still wear a bag of camphor around their necks every winter? Why do you suppose they do it? Here's why. Because of a superstitious belief that it will prevent pneumonia and influenza. This practice of wearing a camphor bag around the neck, of course, does nothing of the kind. The only way so far, of preventing these maladies, is by staying away from people who have colds and by building up our bodily resistance. Milk, fruits, and vegetables, along with sufficient rest, will do much toward building that resistance.

Health Clubs for Negro Women—As reported in *Health Bulletin*, Virginia Dept. of Health:

Health clubs for Negro women are organized by the department for educational purposes. Since October, 1932, clubs have been organized in 32 counties. The Negro Supervisors of Schools in these jurisdictions arrange meetings at central points for mothers, midwives, and others interested in health activities.

Mrs. Emily W. Bennett, R.N., of the department's Bureau of Child Health, gives a series of talks and demonstrations to the various groups. The members take The Healthy Baby course. Certificates are awarded by the Negro Organization Society to those completing it. In addition, club members make baby layettes, arrange for toxoid clinics, screen homes, and provide hot school lunches.

As it is impossible for the supervising field nurse to work in new counties and at the same time supervise the clubs organized two or three years ago, it is being advised that such organizations become a part of the school league. By this arrangement, it is hoped that the work will develop and become permanent.

Again Education Is Needed—Dr. Ronald Hare, University of Toronto, writes of "Puerperal Sepsis and Its Prevention" in *Canadian Public Health Journal*, 105 Bond St., Toronto, Ont. Dec., 1937. *35 cents.* In conclusion Dr. Hare says, as to one phase of the problem, that

. . . much may be done by an educational

program comprising the following points:

1. Better education for students and nurses in the technic of delivery in homes and difficult surroundings, as well as in the knowledge of etiology of infections which is now available.

2. Education of physicians already in practice by lectures, demonstrations, and refresher courses.

3. Education of hospital matrons and nursing superintendents in the part they should play in the elimination of infections from hospitals by control of carriers and infections among the nursing personnel.

4. Education of the public to take advantage of the facilities for antenatal examination now available and in the preventable dangers attendant on midwifery in the home.

5. Education of legislatures in the necessity for the provision of funds for the delivery of necessitous mothers, for skilled obstetrical assistance in case of need, and for the isolation and care of infected cases.

Eleven Slogans—Here are rallying cries for the successive early diagnosis campaigns:

1928—You May Have Tuberculosis—Let Your Doctor Decide; 1929—Early Discovery—Early Recovery; 1930—Protect Them from Tuberculosis; 1931—Tuberculosis—The Foe of Youth; 1932—Tuberculosis Causes Tuberculosis—Every Case Comes from Another; 1933—From Whom Did He Get It? To Whom Did He Give It?; 1934—Tuberculosis Robs You—Public Health Protects You; 1935—Fight Tuberculosis with Modern Weapons; 1936—Fight Tuberculosis with Modern Weapons; 1937—Uncover Tuberculosis by Modern Methods; 1938—Tuberculosis Undiscovered Endangers You.

Learning Versus Teaching—Reviewing "Advances in Public Health Nursing," Elizabeth G. Fox, said:

As for health education, so-called, we are beginning to have some insight into how to make the message of scientific medicine mean something vital to the individual. We have been called health messengers; and in that guise have naïvely thought that we could carry nuggets of science from the laboratory and deposit them on the doorsteps of the people, and that good results would follow. We were blind to the truth of John Dewey's statement that no more is something taught when nothing is learned than is something sold when nothing is bought. We thought that the factors of interest and of voluntary activity, without which teaching is worthless, could be aroused through reason. We tried to make up by vehemence and persistence for what we lacked in insight, and when we failed we wrote our patient down as uncoöperative. More recently we have realized that getting people to adopt new ways is a science based on an understanding of the psychic drives which govern behavior. Even so simple a thing as getting a prejudiced mother to believe that pasteurized milk is safest for her baby may call for something much more subtle than a rehearsal of scientific evidence.

This is not to say that nurses have not been successful in the past in overcoming resistance. The wonder is rather that we have been so often successful. But candor compels us to admit that we have also been baffled time and again and have laid our failure to the contrariness of human nature. Now we are beginning to see that had we understood human nature better we might have discovered the cause of the seeming contrariness and have made our assistance acceptable to the patient.

In short, public health nursing has advanced to the stage of knowing that it is not enough to be a messenger conveying a standard package which we have selected in advance as good for any recipient. We must have our goods in a variety of forms and wrappings, and our methods of delivery must be as various as are the people with whom we are trying to establish fruitful relations. The prospective recipient's own plans and desires and interests must be our guide.

In *A.J.P.H.* and *Public Health Nursing*, 50 W. 50th St., New York, N. Y. Dec., 1937. *35 cents.*

Leadership in the Berkshires—As reported in *Bulletin*, Massachusetts Society for Social Hygiene, Little Bldg., Boston, Mass. (Dec., 1937):

Under the chairmanship of Dr. Modestino Criscitiello, and with the active coöperation of the *Berkshire Evening Eagle*, the Berkshire District Medical Society, the local Health Department and the Pittsfield Council of Social Agencies, the committee has sponsored a series of 6 newspaper articles, which were given prominent space in the *Eagle*. These excellent articles were prepared by Dr. Willys Monroe, Pittsfield's Health Officer, Viola Vreeland, R.N., of the House of Mercy Hospital, and a Pittsfield physician, whose sense of

professional ethics constrained him to remain anonymous.

This project illustrates what a voluntary agency can do most effectively in a community. Pittsfield has made use of the machinery at its disposal to educate the general public on the subject of syphilis—its medical, public health, and social aspects.

Hygeia, January, 1938—Some of the articles in *Hygeia*, 535 N. Dearborn St., Chicago, Ill.:

New Year's resolutions . . . Preventing heart attacks (radio address) . . . Sex education for young children ("folly of fables and wisdom of truth") . . . Why condition the air? . . . These teeth of mine (teeth of savages) . . . The making and unmaking of a quack . . . "Occupational diseases" in children . . . Government's interest in violent and sudden death . . . Overcoming worry (habit control) . . . Occupational diseases of musicians . . . Some obesity "cures" and "treatments" . . . Two common intestinal worms . . . Diseases of the eye . . . New books on health . . . Questions and answers.

Under "School and Health":

The classroom teacher at work . . . Health teaching in January . . . Hygiene and the use of the dictionary . . . Everyday health lessons in a rural school (San Luis Obispo, Calif.) . . . How shall we teach safety to children? . . . New health books for teachers and pupils.

Tell the Public What You Do—*Ohio Health News*, Columbus, Ohio, quotes the newspaper clipping below from Dr. J. A. Carter, Health Commissioner, Batavia, Ohio. The *News* suggests that such information is well worth printing in local newspapers. (It should be offered to the editors in the form of an interview with the health officer.)

The Clermont County District Health Department exists for the sole purpose of rendering service to the people of the county in matters pertaining to their health and welfare. All of its services are free of charge to rich and poor alike. In so far as it is physically possible for the staff to do so, every request for service is given prompt consideration. No requests for bedside nursing or for private medical care can be complied with. Certain of these services are rendered in coöperation with the family physician.

For general information there are listed below some of the services to which residents of Clermont County are entitled and which will be rendered on request. Home visits by the nurses to any case of tuberculosis. Home visits by the nurses to any expectant mother, when requested by the family doctor. Home visits by the nurses to any crippled child. Home visits by the nurses whenever the health of any infant makes this desirable to the family doctor. Certificates showing official registration of birth for every child whose birth is reported. Assistance rendered anyone in Clermont County who desires a birth certificate. Diphtheria antitoxin supplied free to any physician in the county. Smallpox vaccine virus supplied to any physician in the county. Laboratory examinations where requested by the family physician. Investigation of every reported case of communicable disease. Investigation of well water for any resident. Investigation of every complaint of nuisance. Coöperation with milk producers to provide clean milk. Consultation regarding any matter of sanitation. Coöperation with P.T.A.'s and schools to provide physical examination of children before entering school. Follow-up to aid in obtaining correction of defects found in preschool round-up. Immunization of school children against diphtheria and smallpox, where consent is given by parents. Examination of sight and hearing of school children. Physical inspection of all school children that time will permit. Inspection of school children at time of threatened epidemic.

DATES AHEAD

The "Little Red" one room cottage sanatorium was opened in February, 1885.

The first hospital in the modern sense of the word was opened in February, 1752.

Daniel Boone was born Feb. 11, 1735.

St. Valentine's Day comes Feb. 14. And George Washington's birth makes February ever to be remembered.

The first visiting nurse went on duty in March, 1877.

St. Patrick's Day, March 17, has some health significance.

Spring begins March 21.

National Negro Health Week is announced for March 27–April 2.

April Fool's day, April 1, may be a time for telling how people fool themselves—with many health superstitions.

And then the Early Diagnosis Campaign is on throughout the country.

Details about the unfamiliar dates noted above would be found in "News Almanac" and "Almanac Notebook" issued by Community Chests and Councils, Inc., 155 E. 44th St., New York, N. Y. *50 cents.*

COMMERCIAL GADGETS

"Debunker" is a handy device for still and motion photography. Two revolving circles in a 2½" by 5" card give quickly exposure time, etc., for motion, indoor, and outdoor pictures. *Price 50 cents,* but Don Graf, 330 W. 42d St., New York, N. Y., will send it, you to pay, or return.

With the increasing use of planograph and offset, consideration may well be given to special devices for making the most of the processes at the least expense. One of these is "Fototype," card board letters of standard type faces, for the easy production of headlines, captions, and text set in not smaller than 12 point type. A composing stick costs $2.50, the letters about 5 for one cent. Any office worker can set the type, which is then pasted on the sheet with other copy. Address: Fototype Co., 629 Washington Blvd., Chicago, Ill.

If you have letter size, or smaller, sheets you wish duplicated in photostat style, the "Foto-Copyer" is offered by Duplico Corp., 28 East 22d St., New York, N. Y. Birth certificates, statistics, copies of any manuscript or printed material desired for reference, or to pass on for examination may be produced by a clerical worker at a cost of 7 cents a page for the paper. A substantial copy of a draft of the annual report could be made for general scrutiny. Dr. Bauer in Health Education for Adults has in mind the desirability of such copies when submitting important manuscript to editors or publishers.

MAGAZINE ARTICLES

Articles are listed here for personal reading, office memoranda, bulletin boards, house organs, the writing of letters to the editors, etc.

"Angel in Furs," by W. B. Courtney. *Colliers.* Nov. 26, 1937. "They call Mildred Keaton a traveling nurse. She travels by dog sled, by airplane, and by kayak." "Keaton," say the people of Nome, "is the most beloved woman in Alaska."

"Get Its Number," by L. I. Dublin. *Colliers.* Dec. 11, 1937. "Not long ago doctors had to stand by almost helplessly when pneumonia struck. Now it's different. Science is now fighting *B. Pneumococcus* with the test tube."

"The Government Crusades for Good Health," by Dr. Thomas H. Parran. *Democratic Digest,* Women's Division of Democratic National Committee, National Press Bldg., Washington, D. C. Dec., 1937. *10 cents.*

"Health to All of Us." Editorial. *Colliers.* Nov. 27, 1937. Health education, better living conditions, and better health for all.

"Knockout Drops—New Style," by H. Lees. *Colliers.* Nov. 20, 1937. "Ether took the physical pain out of operations: a new batch of anesthetics spare the patient mental distress as well."

"Organized Medicine 'Sees Red,'" by James Rorty. Doctors object to group medical service in Washington, D. C. *Nation,* 20 Vesey St., New York, N. Y. Nov. 6, 1937. *15 cents.*

"Political Surgery." Editorial. *Nation.* Dec. 11, 1937. *15 cents.* What happened to the $100,000 medical-economic survey in California.

"Why Do They Die?" by E. Keating. *Literary Digest*, 233 4th Ave., New York, N. Y. Jan. 15, 1938. *10 cents*. Why babies and mothers die, and what is being done about it.

MOTION PICTURES

"Descriptive List of Eastman Classroom Films." There are now 39 pictures described briefly under "Health" in this catalogue. Eastman Kodak Co., Teaching Films Division, Rochester, N. Y. *Free*.

"Indoor Movie Making" is a mimeographed pamphlet. Bell and Howell, 1801 Larchmont Ave., Chicago, Ill. *Free*. Part is general, part is given in terms of Filmo cameras.

A summary of important fundamentals of indoor movie making with artificial lighting. Important differences in lighting practice for black and white, and color photography are considered and tabulated in chart form.

In Sept., 1937, an injunction was granted in Detroit which prohibited the police from interfering with a performance of "Damaged Lives."

"For All Our Sakes" is a detailed scenario of the talking slide film of that name, together with information for its projection by one of the talking slide projectors which is quite different from the stereopticon. Am. Social Hygiene Assn., 50 W. 50th St., New York, N. Y. 24 pages. *10 cents*.

"Let's Open Our Eyes." One reel film dealing with syphilis. 1,000 feet. 15 minutes. 35mm., also 16mm. National Motion Pictures Co., Mooresville, Ind.

The film points out that closing our eyes to the seriousness of the problem does not prevent the danger from existing none the less. It advises those who know they have become infected to go to a competent doctor or clinic at once. Faithfulness to the treatment schedule is stressed. The film also advocates routine Wassermann's for pregnant women and in all physical examinations. It closes with the message that syphilis can be controlled by energy, organization, and intelligent coöperation.

"Life Saving" is a new 2 reel sound picture (35mm and 16mm) issued by the Dept. of Agriculture, Washington, D. C. If not familiar with the distribution methods of the department it would be well to write for information.

"Your Health Department and What It Means to You." 2 reels. 35 mm. and 16mm. 2,000 feet. 30 minutes. National Motion Pictures Co., Mooresville, Ind.

It is the purpose of this film to show the public the activities, accomplishments, and goals of health department programs, thereby creating the essential coöperation and support of the public. Incidentally, it teaches many valuable health lessons, thus accomplishing a dual purpose.

NEW

New to us is *Bulletin*, Belmont Health Department. What state, you ask? There are 20 to choose from, but in the A.P.H.A. membership list we traced the name of the health officer named on the first page. *This* Belmont is in Massachusetts.

Canada's Health News, Health League of Canada, 105 Bond St., Toronto, Ont. A news bulletin supplementing the magazine, *Health*, the two issued alternately.

RADIO

"Keeping Well." The second series of radio talks broadcast by Baltimore Health Dept. and Medical and Chirurgical Faculty of Maryland; 145 talks or dialogues; 280 page paper bound book, with contents and index. *50 cents*.

"Radio Broadcasting Stations of the United States." List of all stations; map (with time divisions) showing 138 NBC network stations. National Broadcasting Co., Rockefeller Plaza, New York, N. Y. *Free*.

"The Dentist Says" is a non-commercial program of dental health education via broadcasts from several

stations, together with a teaching plan book, and weekly copies of the broadcasts. The story form is used. Tuesdays as travelogues, Fridays as personal experience stories. The latest information is that the series is being broadcast over WMCA, New York; WIP, Philadelphia; WFBM, Indianapolis; WBAA, West Lafayette, Ind. For samples and full particulars address Dr. George W. Clapp, 220 W. 42d St., New York, N. Y.

A broadcast on venereal diseases was given over Station WRVA, Richmond, Va., as a feature of 1937 National Negro Health Week. The speaker was Dr. D. Webster Davis, Jr., of the Richmond Medical Society. In *National Negro Health News*, U. S. Public Health Service, Washington, D. C. July–Sept., 1937. Reports of the Health Week mention 327 radio talks in various cities.

"Getting Ready for School" is a dialogue on school health education. A paragraph from the announcer's statement:

> We take you into the Home Bureau office where Mrs. Brown, President of the Home and School Club at Cramer's Corners, and also member of the Home Bureau, is waiting for Mrs. Graham, the Home Demonstration Agent. Mrs. Brown has 3 children, 2 in school and 1 just starting this year. Miss Grout, Consultant in School Health Education (Cattaraugus County) comes into the office, also to see Mrs. Graham, and sits down next to Mrs. Brown. Presently they begin to talk." (The conversation which follows interweaves facts about school child health conditions, and the program of Cattaraugus County school health service.)

The Health League of Canada (105 Bond St., Toronto, Ont.) has had the coöperation of 35 broadcasting stations in giving a weekly 15 minute health talk. The December and January topics included:

> Cod liver oil . . . When to call the doctor . . . Diphtheria . . . Health insurance . . . Tuberculosis . . . The school child . . . Typhoid fever . . . Results of milk pasteurization.

In a series on "Programs That Have Made Station History" we learn about Dr. Carlton's health talks. *Radio Daily*, 1501 Broadway, New York, N. Y. (June 7, 1937; *5 cents*), says:

> On May 31, WSJS, Winston-Salem, N. C., celebrated the seventh anniversary of its oldest continuous program. Every Monday evening at 8 o'clock since June 1, 1930, Dr. R. L. Carlton, head of Winston-Salem's City Health Department, has brought to the community a personal message on the subject of individual and public health or has presented some oustanding figure in the field. The program on May 31 was his 364th.
>
> One of the principal reasons for the ever-increasing success and influence of the health program is the fact that Norris O'Neil, general manager of WSJS, has never exercised censorship on the doctor's remarks, believing that the station's audience has a right to hear frank discussions of any and all health problems, and that radio is the best means of bringing these discussions to it.
>
> All opportunities to sponsor the program are turned down. Dr. Carlton's Health Talks are strictly a public service.

A personal experience in dealing with the "censor" of a national broadcasting chain is related in "What Can You Stomach?" in *The New Yorker*, 25 W. 43d St., New York, N. Y. Oct. 9, 1937. *15 cents*. Written by an Associate Professor of Clinical Orthopedic Surgery at Columbia, Dr. Armitage Whitman. In view of the recent Mae West incident it would seem that doctors are more suspect than actresses with a reputation. Sample:

> "No, Doctor, you can't say 'body' of the patient. 'Body' sounds like a 'dead body.'"

So far this department of the *Journal* has heard of no audience-protests against the use of syphilis or venereal diseases in any of many broadcasts over the country. On the other hand, one of the early December commercial programs brought out "a flood of protests." The skit was characterized as "obscene," "indecent," "vulgar,"

"filthy," "sexy," and so on. Apparently the "good taste" barrier so often urged by the chains as barring mention of syphilis did not hang very high for a commercial.

"A Well Person is a Community Asset. A Sick Person is a Community Liability." This heads a placard poster announcing weekly broadcasts over 5 local stations. Community Chest, Los Angeles, Calif. Also another: "Guard Your Health," "See Your Doctor While You're Well" with announcement of a weekly broadcast, "Heartbeats of the City."

"What's Wrong with This Radio Talk?" headed a short broadcast, announcer and director of a public health nursing service being the participants. On another page were given 8 corrections, including a sample story presenting the essential information in the uncorrected statement. Worth looking up. *Public Health Nursing*, 50 W. 50th St., New York, N. Y. Aug., 1937. *35 cents.*

EXHIBITS

As reported in *Journal of Home Economics:*

> Much interest was shown at the Eastern States Exposition in the Connecticut 4-H exhibit on home care of the sick in which simple homemade comforts were featured. The wheel chair improvised from a rocker on roller skates frequently brought the ejaculation, "Now, who ever thought of that?"

"J. R. C. Booth at the Southeastern Fair," by B. Worthen, in *Junior Red Cross Journal*, Washington, D. C. (Jan., 1938), tells how a group of Red Cross Juniors constructed and managed a display at a fair. Since health is so large a share of the Junior program, this article prompts us to suggest that the juniors might put on health displays at other fairs, if the idea was brought to their attention.

"The Paris International Exposition," by L. Taylor. *Trained Nurse and Hospital Review*, 468 4th Ave., New York, N. Y. Nov., 1937. *20 cents.* Brief description of the "Palace of Discovery," part of which

> . . . might have been built for the special interest of the nurse, so thorough and interesting is the section which deals with the history of medicine.

The whole job of "Organizing Educational Exhibits" for convention displays is described under that title in *Journal of Health and Physical Education*, Ann Arbor, Mich., Oct., 1937.

An actually satisfying holder for card signs and placards, to hold them upright on desk or table, in window or elsewhere, is "klipeasel," a simple device at $1.25 for 12, using 2 to a card or sign. Obtain from local window display house, or Window Advertising, 175 5th Ave., New York, N. Y.

For window display and other exhibit planners corrugated paper in a wide range of color, texture, and design is available through Dennison Mfg. Co., Framingham, Mass., and Window Advertising, 175 5th Ave., New York, N. Y. Each offers a line with distinctive qualities, each has additional materials for display purposes, and also makes letters cut from corrugated paper.

BOOKS AND REPORTS

Public Medical Services. A survey of tax-supported medical care in the United States—*By Michael M. Davis. Chicago: University of Chicago Press,* 1937. 170 pp. Price, $1.50.

In introducing this small but compactly written volume, Mr. Davis first of all paints a useful historical background in which he emphasizes the initiation of public medical services as a part of relief activities for the indigent, and later brings out the way in which the picture has been modified by a quite different motivation—a desire to meet broad community needs primarily in the public interest rather than the emergency needs of an individual. The hospitalization of mental diseases and of tuberculosis and the provision of clinics for the treatment of syphilis are obvious examples of the later tendency.

Mr. Davis reviews existing provisions for home and hospital care of various types at direct government expense and also the indirect support of voluntary institutions through financial grants. In an interesting table reviewing statistics for the year 1929, he estimates that of the total medical bill of $3,600,000,000, $2,830,000,000 were paid in fees, $500,000,000 by taxation, $170,000,000 by insurance, and $100,000,000 by charity. Thus two-thirds of the cost of medical care was still borne by individuals on a fee basis, and of the remainder the major part by taxes. The book closes with an interesting consideration of quality of service and of the importance of community coördination. The author wisely emphasizes the importance of systematic professional supervision of professional work which, while not always present in public medical services, is obviously much more effective there than in individualistic private practice.

C.-E. A. WINSLOW

Phenomenon of Local Tissue Reactivity and Its Immunological, Pathological and Clinical Significance—*By Gregory Shwartzman, M.D. New York: Hoeber,* 1937. 461 pp., 67 ill. Price, $7.50.

The phenomenon of local skin reactivity, more commonly known as the "Shwartzman Phenomenon," was first observed by the author of this volume in September, 1927 (*Proc. Exper. Biol. & Med.* 26:207, 1928), in the course of his attempts to gain a more accurate understanding of factors and mechanism responsible for the systemic intoxications of infectious diseases. In order to overcome a hypothetical refractory condition of the animal cells, culture filtrates were given to rabbits by different routes on consecutive days.

When typhoid bacillus culture filtrate was injected intracutaneously and 24 hours later another dose was given intravenously a hitherto undiscovered local reaction occurred. Approximately 2 hours after the intravenous injection a blue discoloration appeared at the site of the skin injections made the day before. The discoloration rapidly increased so that within 4 hours the areas were dark blue in the center with a deep red zone at the periphery. The reaction reached its maximum size in about 5 hours when it was hemorrhagic and necrotic; sloughs formed about 48 hours after the intravenous injection;

these were followed by scab formation with healing in about 8 days. The appearance of a reaction 4 hours after the intravenous injection is illustrated by a colored photograph reproduced as the frontispiece.

Jules Bordet has written a foreword for the volume. In it he says:

> The remarkable phenomenon which Dr. Shwartzman has studied with such ingenuity and perserverance has aroused the most vivid interest among bacteriologists and immunologists. From the very beginning his discovery has been justly recognized as an important scientific development. The discovery of the phenomenon was totally unexpected, it must be acknowledged, for if there is any field which has been minutely investigated from every point of view and conscientiously searched it is that of the reactions of the organism to bacterial products. One could not have suspected that in this field secrets still remained unraveled and surprises were in store for us.

The Shwartzman phenomenon, Professor Bordet suggests, is closely related to the phenomenon of Sanarelli. He states that:

> Dr. Sanarelli had shown that an intravenous injection of *B. coli* culture filtrate, although easily tolerated by the control animals, elicits a fatal hemorrhagic congestion in the intestinal tract of rabbits which had previously received a sub-lethal dose of cholera vibrio. . . . It is highly probable that these phenomena determine the pathogenesis of certain complications in the course of infections.

This volume consists of 13 chapters. The first deals with basic matters such as terminology, general considerations, and quantitative estimations of potency of active principles. The second discusses bacterial filtrates and other products capable of eliciting the phenomenon; the third concerns physicochemical properties. Subsequent chapters consider, interestingly and thoroughly, immunological behavior of active principles; immunity to the phenomenon; rôle of inflammation; methods of elicitation; reactivity of malignant neoplasms; reacting potency of non-bacterial substances, nature of the active principles; immunological relationships of the phenomenon (in this it is shown that the phenomenon is not related to allergy); immunological, pathological, and clinical significance; and application to treatment of certain human conditions.

The material constituting each of the chapters is well systematized and each ends with a recapitulation. This method of presentation greatly facilitates reference and study.

The final chapter upon the application of the phenomenon to treatment of certain human conditions reveals how little of practical value to the clinician has resulted from recorded investigations in 10 years. Like the bacteriophage, the Shwartzman phenomenon holds intense interest for the research worker and its study is full of promise. The phenomenon offers an explanation for certain phases in the development of disease processes for which there has been up to now no lucid understanding. The author's conclusions as to the nature of the phenomenon are

> . . . that the state of reactivity described deals with a hitherto unrecognized functional disturbance in the suspectibility of the animal tissue elicited by means of certain bacterial active principles and that the phenomenon of local tissue reactivity displays a mechanism whereby injury may be produced through the synergistic effect of bacteria and their products and also through the concerted effect of bacteria and their products and nonrelated anaphylactic processes.

Immunologists, and clinicians, too, will be glad to have assembled in one place the hitherto scattered mass of information already accumulated upon the Shwartzman phenomenon. For a great preponderance of the ingenious, painstaking, and illuminating work recorded herein the author is himself responsible.

The volume contains an ample bibliography (from which the titles of cited papers are omitted), an author index, and a subject index. It is an attractive addition to our libraries; the very name of its publisher is well known to be synonymous with superlative in the book making art. It constitutes another fine memorial to his high ideals.

A. P. HITCHENS

Pathology (Clio Medica)—*By E. B. Krumbhaar, M.D. New York: Hoeber,* 1937. 206 pp. Price, $2.00.

The author has compiled a wide range of diverse developments in medicine, either indirectly or directly related to pathology, and has woven these into an intelligent, intriguing and educational volume. He has made careful and wise selections. The material is presented in a clear, straightforward, understandable form, showing a personal knowledge and interest in the material by the author. It is an excellent, concise presentation from which students in medicine or those interested in medical development can readily obtain authentic information concerning the mistress of medicine—pathology. The Chronological List of Pathologic Milestones and the Index of Personal Names, with the usual subject index, constitute valuable features and reminders.

Interest is attracted to the volume through its general compilation, size, and printing. M. PINSON NEAL

The Baby's First Two Years—*By Richard M. Smith, M.D. (4th ed.) Boston: Houghton, Mifflin,* 1937. 122 pp. Price, $1.75.

Dr. Smith's book on the care of the baby has been a standard manual for over two decades. This 4th edition has been revised carefully and new material incorporated to bring it up to date. It is written simply, clearly, and to the point. There are no superfluous or obscure statements. The illustrations assembled in the middle of the book are very attractive and helpful. The chapter on "A Typical Day" is practical and should be of great aid to the perplexed mother. The handy guide can be recommended to mothers and prospective mothers without reservation.

RICHARD A. BOLT

Man, Bread and Destiny—*By C. Furnas and S. M. Furnas. New York: Reynal & Hitchcock,* 1937. 364 pp. Price, $3.00.

Of the many recent books on nutrition for the general reader, this is one of the best. The authors, one a professor of chemical engineering at Yale, and the other, his wife, a former instructor in nutrition at the University of Minnesota, not only have presented the fascinating story of man's food in a comprehensive and reliable manner, but have produced a most entertaining narrative, sparkling with infectious wit and humor.

Appropriately using "Bread" in their title as synonymous with food generally, the authors begin their story with an interesting, if somewhat conjectural description of the diet of early man, then recount some of the early ramblings in the science of nutrition, and next proceed to a popular account of the physiology of eating and the proper functions in the diet of fats, carbohydrates, proteins, minerals, and vitamins. More is already known about vitaminology than they have told, but this is no disparagement of any modern book on foods, for discoveries in this field seem to come faster than printers can set type.

Other topics treated in this engrossing book include the effects of diet on the teeth, on mentality, and on stamina, and the food fads and follies, aptly characterized as "Gullible's Travels." There is also material on cooking and the psychology of eating, on the economic

aspects of the world's food supply, and on the future of food. An appendix gives data on the best sources of minerals and vitamins for the adequate diet.

That the authors have gone, in general, to the proper sources for their information is shown by a bibliography comprising 24 pages. There is likewise a good index. Anyone interested in the vital subject of food and its effects upon human health, as everyone should be, will find this book very much worth while. JAMES A. TOBEY

The Measurement of Outcomes of Physical Education for College Women — *By Elizabeth Graybeal. Minneapolis: University of Minnesota Press,* 1937. 80 pp. Price, $1.00.

This monograph is a report of an experiment carried out at the University of Minnesota in an effort to determine whether the college requirement in physical education for women could be proved justifiable. The subjects for the experiment were freshmen women entering the university in the fall of 1932. After the elimination of those who deviated from the normal to the extent that remedial work was indicated, they were divided at random into an experimental and control group. The experimental group participated in required physical education, while the control group were excluded from participation in required work, and a check was kept on the outside activities of both groups.

Subjects were tested at the beginning of the experiment in 4 objective tests—attitudes, knowledge, motor ability, and posture. They were given the same tests at the end of both 1 and 2 year periods. The attitude test used was developed by John Jacobsen, then on the Committee on Education Research at the university, and consisted of 161 items expressing varying attitudes toward health and physical education which the students checked if they were in complete agreement with the statement. The knowledge test was constructed by a committee from the staff of the Physical Education Department for Women. It consisted of 355 multiple choice questions on physical education activities and health. The motor ability test was the Graybeal-Minnesota Motor Ability Test Batteries for College Women worked out for the purpose of this study along the line of Cozens' Tests for College Men and made up of strength and coördination tests. Posture was measured by grading photographically: (1) depth of spinal curve, (2) segmental angulation and body tilt, (3) position of head and neck. In addition to the above tests, at the end of the 1 and 2 year periods part of the Schneider Cardiovascular Tests were given.

Improvement in the functions tested was consistently noted for the experimental group, which was not true for the control group, at the end of both the 1 and 2 year periods. It seems unfortunate from the standpoint of the experiment that some of the colleges at the university do not have the 2nd year requirement in physical education, which meant that the group tested at the end of the 2 year period was comparatively small. The interpretation of those results therefore would seem less reliable. Dr. Graybeal concludes, "that the improvement in the functions tested, while not great in every instance, was demonstrated so consistently by the group who participated in the prescribed course, that the requirement in physical education would seem to be justifiable."

The tests selected by Dr. Graybeal do not measure, of course, all the outcomes of the physical education program, and we might question whether they are the best measure of the functions tested, but there can be no doubt that the experiment was scientifically

carried out, and the book is a well written report of that investigation.

RUBY J. CLINE

Proceedings of the 1936 Annual Conference of the National Society for the Prevention of Blindness. *New York: N.S.P.B.,* 50 West 50th Street, 1937. 134 pp. Price, $1.00.

This volume of Proceedings contains the papers presented at the Annual Conference dealing with the following subjects: Saving eyesight in industry, eye health in relation to social work, rehabilitation vs. relief, eye health of college students and of school children, the nurses' approach to eye health, and sight saving classes. Data submitted for one state indicate that eye injuries represent 17.1 per cent of all injuries by industry, with machinery manufacture heading the list.

Considering the conservation of eye health, attention is directed to the preliminary examinations, inventories, and case records; periodic eye examinations; correction of defective vision; prompt first aid; sanitary working conditions; proper lighting; and venereal diseases. Tests to determine eye skill are described while the importance of a yearly examination of the eyes of college students as a part of the routine of every health service is stressed. It is made apparent that factors related to sight may have educational, social, and psychological effects upon the development of the child. Impressive financial data are submitted to indicate the value of preventive activities. Health administrators, educators, and social workers will find this volume of practical interest. IRA V. HISCOCK

Child Psychology—*By Fowler D. Brooks. New York: Houghton Mifflin,* 1937. 599 pp. Price, $3.00.

This new book on child psychology by Professor Brooks deserves more than passing notice. It reveals the same thorough scholarship and exhaustive research as his companion volume, *Psychology of Adolescence.* He has brought together the results of the leading investigators in his field, and has presented the material in a logical, impartial, clear, and systematic manner. The book covers the psychological development of the child from the prenatal period to adolescence.

Dr. Brooks is not wedded to any particular hypothesis or theory. He does not burden the reader with any special "school of thought." His book is really a compendium of thoroughly sifted scientific data bearing upon the normal growth and development of the child as an integrated individual. It cannot be too highly recommended as a reference volume.

It is completely documented with references to original sources and additional references to the material in each chapter are given at the end. The format of the book is excellent.

RICHARD A. BOLT

First Aid Textbook — *American Red Cross (rev. ed.). Philadelphia: Blakiston,* 1937. 256 pp. Price, $1.00, cloth, $.60, paper.

It has been 4 years since the last edition of this book appeared. Many of the same author-physicians participated in this revision. Not content with such formidable authenticity, the manuscript was then submitted to various national organizations and to additional individual specialists on mines, safety, electricity, snakes, fractures, drowning, poisons, rabies, etc. So without stretching the point, we may assume that after this careful preparation and scrutiny, anything which got past these experts and now appears in the text is at least relatively authoritative.

There are 14 chapters: on the need for first aid; anatomy and physiology of the body; dressings and bandages;

wounds; shock; wounds requiring additional consideration; artificial respiration; injuries to bones, joints and muscles; injuries due to heat and cold; poison; unconsciousness; common emergencies; transportation; First Aid kits.

There are 18 drawings and 153 photographs to illustrate the text. The type is sufficiently large throughout to be read even though the reader's hands are shaking. Pages are broken down into numerous paragraphs, numbered or headed with heavy type, as necessary. The authors do not indulge in long dissertations. The reader is never left in doubt. Sentences are often in the form of a command—"Do not rub." "Close the eye."

The preface by Harold F. Enlows, Director, First Aid and Lifesaving Service, American National Red Cross, closes with this statement: "Never has the need for first aid been greater than at present, when accident fatalities of the United States have reached such a proportion that, if those of a year were to happen on a single day, it would plunge the entire nation into mourning as the greatest catastrophe in recorded history."

But that was the preface in the 1933 edition. In the 1937 edition, not a word is said about the incidence of accidents. And for at least one good reason which comes to mind—the accident rate has reached such mighty proportions in this country that Mr. Enlow simply could not find words sufficiently adequate to express the increase over 1933.

To any who think a First Aid Textbook has to be stodgy reading, a glance at the opening sentence of Chapter I: "A heavy truck swings around a blind corner, crashes into an automobile and hurls it over an embankment. A man is pinned under the wreckage." And that is not all. Through "unskilled and ignorant handling, the man's spinal cord is punctured by a broken bone, so that . . ." But no reviewer gives the plot away. Read it yourself. It is a thrilling book.

In this mad day of commercial lure through offering prizes of every conceivable sort, someone ought to start a movement to give this First Aid Textbook as a prize whatever be the pretext to every person who ventures out of his house. And since the inside of the house is not free from accidents, everybody should have a copy.

W. W. PETER

Handbook of Hygiene—*By Joseph W. Bigger, M.D. (5th ed.) Baltimore: Wood,* 1937. 405 pp. Price, $4.00.

Only a few days ago we reviewed a book on hygiene and quoted the author as saying that something of an apology was necessary these days for writing still another book on this subject. The ink was scarcely dry when the present book came to hand. If we had not known something about the author we would have been inclined to pass this by, but reading it has brought its reward.

It is refreshing to find an author who has nerve enough not to follow the usual routine. He begins with a chapter on Vital Statistics, knowledge of which he justly says is commonly lacking among medical men and women. The communicable diseases are dealt with in groups according to their chief methods of spread and not according to the methods of prevention, as in the book mentioned above. The usual subjects treated in a book on hygiene then follow in order. Perhaps of unusual interest is the chapter on Diseases of Uncertain Etiology, in which juvenile rheumatism is divided from adult and senile rheumatism. Juvenile rheumatism, according to the reports, gives an unusual amount of trouble in England, with 1,175 deaths in 1935;

but almost of more importance is the "heart case" or "heart disease" which is left. In the same year, 1935, there were 114,671 deaths from "heart disease," and it is estimated that 40 per cent of these, or approximately 46,000, were the result of juvenile rheumatism. The author recommends 3 months' complete rest in bed for every frank case, followed by 6 months of supervision, a treatment which he feels sure would result in great diminution of after effects.

The author calls special attention to the chapter on Poisonous Gases, which he says may become a matter of immediate concern to doctors as well as the general public. In this he reflects the attitude of European countries and especially, it seems, of England, which is manufacturing gas masks on a stupendous scale, distributing them to the public in enormous numbers, and teaching all, even children, their use.

The book is designed to supply practical information to doctors in practice and to medical students, not for postgraduate students or those working for a Diploma in Public Health. Much as we like the book, we believe it is not one to recommend to medical students, except possibly during their first year. There is a lack of history and the reviewer has long been an advocate of the historical method of teaching. The outstanding feature of the book is its common sense and, what amounts to much the same thing, practical usefulness. Immediately under the name of each disease the causative organism and the period of incubation are given.

The book is written in easy and readable style, very free from errors, and can be commended.

MAZŸCK P. RAVENEL

Take Care of Yourself: A Practical Guide to Health and Beauty—Stressing the Proper Way to Use and the Prudent Way to Buy Home Remedies and Cosmetics—*By Jerome W. Ephraim. New York: Simon and Schuster,* 1937. 287 pp. Price, $2.00.

Certain important aspects of personal health are competently set forth in this book by a layman who is stated by Dr. Logan Clendening in a felicitous foreword to be an "Honest" manufacturer of drugs, cosmetics, and toilet articles. Unlike many of the sensational books that have emanated recently from officials of self-appointed consumers organizations, it is not malicious, misinformed, and meretricious, but is, in general, medically sound and well balanced. Mr. Ephraim writes intelligently and informatively of the care of the teeth, hair, skin, and feet; he also discusses common colds, digestive disturbances, constipation, reducing, vitamins, pain killers, sleep, and antiseptics. Perhaps his best chapter is, seriously, one entitled, "Your Hangover and How Not to Have One." The innumerable purchasers of cosmetics and home remedies will find much of practical value in this interesting book.

JAMES A. TOBEY

Socialized Medicine in the Soviet Union—*By Prof. Henry E. Sigerist, M.D. New York: Norton,* 1937. 378 pp. Price, $3.50.

Written frankly from the Marxian viewpoint, Sigerist has given us a book which no one interested in public health can afford to miss. It is not a report but a sociological study; yet it is packed full of facts showing the tremendous progress which has been made in Soviet medicine during the past 20 years. When, following the Great War, the revolution, foreign intervention, drought and famine, the Soviet Union reorganized its medical service, it started from the scratch. During the 20 years from 1913 to 1933 Sigerist tells us that the number of

physicians increased 4 times—from 19,785 to 80,423. In 1936 there were approximately 90,000 physicians and the 1937 health plan called for 107,000. Although this is tremendous, it is insufficient, says Dr. Sigerist. The plan toward which they are working in the Soviet Union calls for 1 doctor per 1,000 of population, which indicates that they are still short 70,000 doctors and 3,000 additional physicians will be needed each year to keep up with the increase in population. The medical schools are rapidly catching up, and although the quality often leaves much to be desired, it too is improving with amazing rapidity.

The author asserts that the Soviet Union was

> . . . the first country that has ever attempted to socialize medicine, the first that ever considered the protection of all the people's health a public function of the State. Much remains to be accomplished in the public health field and no one knows it better than the men who were responsible for the work. I, too, am well aware of present deficiencies in Soviet medicine. . . . There are poor institutions poorly equipped and managed. In Russia as elsewhere, you find bureaucrats and fools and people who like to take the way of least resistance but these shortcomings are seen and admitted freely. They are discussed openly and means and ways are sought to overcome them—not at some uncertain time in the future, but at a definite date according to plan.

Sigerist frankly acknowledges that he has not stressed inadequacies and inefficiencies in his book nor has he wasted time in describing poor institutions.

> I have been primarily interested in the principles of Soviet medicine and those positive achievements which represent a permanent gain. . . . My method in this book was like that in the one on American Medicine. There also, I could have written many pages on poor institutions, on the practice of fee-splitting and other dark aspects of American medicine. I omitted them for the same reason because I was convinced that only the positive achievements of American medicine would in any way enrich the world.

Not only public health officials and medical men but all who are interested in social phenomenon and social experiments will be interested in this book. Every educator in the land, every college professor and college president, and every social worker as well as every health officer, should read this valuable volume. JOHN A. KINGSBURY

Federal and State Control of Milk Prices—*By James A. Tobey, Dr.P.H. Chicago, Ill.: International Association of Milk Dealers,* 1937. 42 pp. Price, $2.00.

This concise volume supplements effectively *The Legal Aspects of Milk Control* by the same author. Members of the dairy industry as well as milk control officers will find useful this discussion of government regulation of milk prices and the production and distribution of milk. The volume reviews the Constitutional status of laws fixing prices and regulating the production and distribution of milk as shown by court decisions. IRA V. HISCOCK

The Pneumonokonioses (Silicosis). Literature and Laws—Book III—*By G. G. Davis, E. M. Salmonsen, and J. L. Earlywine. Chicago: Chicago Medical Press,* 1937. 1033 pp. Price, $8.50.

The third book in the series on the pneumonokonioses covers the period 1915–1936. The two previous books contained references dated from 1556 to 1934 inclusive. The present volume is made up on the same plan as Book I and Book II: a brief abstract of each article issued during the year is given. These abstracts are usually well done and in sufficient detail to indicate the value of the article to the reader. The book is in two parts, with an author and subject index between Part I (Abstracts) and Part II (Laws). The

reviewer again wishes to commend the authors for their work which is so useful to those interested in the subject.

R. R. SAYERS

School **Nursing: A Contribution to Health Education**—*By Mary Ella Chayer, R.N. (2nd ed.) New York: Putnam,* 1937. 329 pp. Price, $3.00.

In this second edition, revised and enlarged, Miss Chayer has retained all that was fundamental and helpful in the edition of 1931 and has added much of value accumulated in the intervening years. A new chapter on Rural School Nursing has been added. The author has recognized that the public health nurse should be a health educator and that with special training in the principles of education she may become a valuable asset in the secondary as well as the elementary schools. The chapter on the preparation of the nurse for school health work indicates the modern trend in nursing education. From a practical standpoint the chapter on the administrative relationships of the nurse with the school should be of considerable help to nurses trying to find themselves, in a complicated situation. The volume is practical in its every chapter. It could be consulted with profit by school executives and public health officials as well as by nurses seeking light on school nursing. The book is supplied with a good working bibliography.

RICHARD A. BOLT

BOOKS RECEIVED

LET'S HELP THE DOCTOR. By M. O'Donovan-Rossa. New York: Devan-Adair Co., 1937. 141 pp. Price, $1.50.

ATLAS OF SKELETAL MATURATION. By T. Wingate Todd. St. Louis: Mosby, 1937. 202 pp. Price, $7.50.

APPROVED LABORATORY TECHNIC. By John A. Kolmer and Fred Boener. 2nd ed. New York: Appleton-Century, 1938. 893 pp. Price, $8.00.

TOXICOLOGY. By William D. McNally. Chicago: Industrial Medicine, 1937. 1022 pp. Price, $10.00.

THE COLLAPSE THERAPY OF PULMONARY TUBERCULOSIS. By John Alexander. Springfield, Ill.: Thomas, 1937. 705 pp. Price, $15.00.

NURSES HANDBOOK OF OBSTETRICS. By Louise Zabriskie. 5th ed. Philadelphia: Lippincott, 1937. 724 pp. Price, $3.00.

HEALTH. By C. E. Turner and Georgie B. Collins. 3rd ed. New York: Heath, 1937. 231 pp. Price, $.72.

CLEANLINESS AND HEALTH. By C. E. Turner and Georgie B. Collins. 3rd ed. New York: Heath, 1937. 236 pp. Price, $.80.

MILK CONTROL. Governmental Control of the Dairy Industry in the United States. Prepared by the American Municipal Association, Chicago: American Municipal Association, 1937. 49 pp. Price, $.75.

ALCOHOL: ONE MAN'S MEAT. By Edward A. Strecker and Francis T. Chambers. New York: Macmillan, 1938. 230 pp. Price, $2.50.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Less Canadian Syphilis? — In Toronto 6,188 persons were reported as under treatment for venereal diseases in May, 1937, a rate of 9.6 per 1,000. Although there was an increase in late cases of syphilis as compared to a similar survey in 1929, there was a 50 per cent decrease in new cases.

BATES, G. A Survey of the Incidence of Venereal Diseases in Toronto in 1937. Canad. Pub. Health J. 28, 12:575 (Dec.), 1937.

Wholesale Sewage Disposal—Describing the new New York sewage treatment plant about which every statistician runs into the multiple millions, whether it is dollars of costs, gallons of sewage, or customers served. One gathers that it is an outstanding job excellently done.

BINGER, W. D., and GOULD, R. H. The Wards Island Sewage Plant. Munic. San. 8, 12:627 (Dec.), 1937.

Report on Public Relations—At the tenth Annual Conference of the (British) Central Council for Health Education, at which there were over 400 representatives of official and voluntary agencies, the discussion was chiefly concerned with the current national health promotion program, and the possibilities in it for health education to secure better use of existing public health machinery.

CHRYSTAL, G. Public Relations of the Public Health Services. Pub. Health. 51, 3 (Supplement) (Dec.), 1937.

About Gonorrhea—In this British experience covering 250 cases, sulfanilamide was found to cure gonorrhea in most patients with both acute and chronic infections, within a week. The necessary precautionary measures are covered. If cases are rendered non-infectious as promptly, the use of the new drug is a valued addition to the prevention as well as the cure of gonorrhea.

COKKINIS, A. J. Treatment of Gonorrhea with Oral Sulfanilamide. Brit. M. J. Nov., 1937, p. 905.

Toward Three Score and Ten—In 1930 the expectation of life at birth for white males was 50 and for females 63 years. The decline in mortality has been most rapid in childhood; above 50 the rates remain unchanged. The current remarkable increase in life expectancy cannot continue in the next generation unless methods are developed for controlling diseases of middle life. The ultimate longevity attainable under present conditions is 70 years. This paper should be studied by every health worker: "must" reading for everyone.

DORN, H. F. The Increase in Average Length of Life. Pub. Health Rep. 52, 49: 1753 (Dec. 3), 1937.

Diagnosing Undulant Fever—Discussing the meanings of the skin test, the opsonic and rapid agglutination tests, and cultural methods for brucella infection. The first is the most sensitive. If it is positive, then the second should be performed.

GOULD, S. E., and HUDDLESON, I. F. Diagnostic Methods in Undulant Fever (Brucellosis). J.A.M.A. 109, 24:1071 (Dec. 11), 1937.

About **Syphilis** — Having been brought up on the belief that a repeated positive Wassermann meant syphilis (with easily determined exceptions) and that all syphilis should be treated, this paper raising some question of the value of treatment in the presence of positive Wassermanns without other signs of syphilis comes as a great shock. Despite the article, here is one who still believes that syphilis should be treated as long as it exists, providing there are no contraindications.

HINTON, W. A. The Significance of a Positive Blood Test in Syphilis. New Eng. J. Med. 217, 25:978 (Dec. 16), 1937.

Allaying **Fears of the Asylum**—How a state mental hospital assists the surrounding rural communities with ever-present mental hygiene problems is told. Thanks to a continuing educational program and clinic services, 142 of the 776 admissions in 1936 were voluntary, whereas before the program, one or two a month was the rule.

JACKSON, J. A. An Approach to a Rural Mental Health Problem. Pub. Health Rep. 52, 49:1777 (Dec. 3), 1937.

Population **Problems**—This British author observes that the cocksureness with which the contention is made that the poor have more children than the well-to-do, that the agricultural population is more fertile than the industrial, would incline one to assume that statistics prove the assumptions or that they are so obvious that statistics are unneeded. Neither assumption is correct, he says, and tells why. We really ought to have accurate data before we attempt to discuss population trends and the possibility of influencing them.

KUCZYNSKI, R. R. The Future of Our Population. J. Roy. San. Inst. 58, 6:356 (Dec.), 1937.

Eugenists **Will Be Pleased**—Reporting that, in Alberta (Canada), the work of sterilizing the insane and mentally deficient has gone on quietly, efficiently, and preëminently satisfactorily.

MACLEAN, R. R., and KIBBLEWHITE, M. A. Sexual Sterilization in Alberta. Canad. Pub. Health J. 28, 12:587 (Dec.), 1937.

Last Word on Pneumonia—What every health worker should know about the diagnosis and serum treatment of pneumonia. Required reading.

MCCANN, W. S., *et al.* Postgraduate Institute on Pneumonia. J.A.M.A. 109, 25:2056 (Dec. 18), 1937.

Despite Inadequate Public Health Measures—Measles death rates have declined, presumably because mothers have been taught to regard the disease seriously and to prevent needless exposure of very young children, and through general improvement in infant nutrition. The author suggests that if immune serum is given, it should be delayed from 5 to 9 days after exposure to modify rather than prevent the attack.

MCKHANN, C. F. The Prevention and Modification of Measles. J.A.M.A. 109, 25:2034 (Dec. 18), 1937.

When We Were Young—Public health conditions in England a half century ago. These reminiscences by a British M.O.H. are amusing and revealing, and lead to much soul-searching.

ROBINSON, E. S. Forty-four Years of Public Health Work. Pub. Health. 51, 3:67 (Dec.), 1937.

Wholesale Health Protection—An absorbing story of the planning, implementing, and organization of the medical and health services for the recent Boy Scout encampment at Washington. Commenting on the whole affair, the author mentions the unusual experience of having 27,000 visitors for 10 days without a single fight, a single

drunk, or case of venereal disease, or a single day spent by a visitor in jail!

SMITH, W. L. Medical Activities at the Boy Scout Jamboree Held in Washington, D. C., June 30–July 9, 1937. Pub. Health Rep. 52, 51:1854 (Dec. 17), 1937.

Doubts About Polio Prophylaxis—In the face of a Toronto epidemic, about 4,500 children received 2 zinc sulphate nasal sprays to protect them against poliomyelitis. Eleven cases occurred while in a control group of 6,300 children 19 cases were reported. The spraying caused no serious complications. The study furnishes no evidence, the authors conclude, that nasal spraying as practised has any protective value against poliomyelitis, and as the treatment requires the services of otolaryngologists, and cannot be done sufficiently quickly to meet an emergency, it cannot be considered a practical public health procedure. These are disheartening conclusions.

TISDALL, F. F., *et al.* Zinc-Sulphate Nasal Spray in the Prophylaxis of Poliomyelitis. Canad. Pub. Health J. 28, 11:523 (Nov.), 1937.

More About Another Tuberculin Test—Tuberculin ointment applied to the skin in a patch test is suggested as a superior substitute for the von Pirquet or Mantoux test.

WOLFF, E., and HURWITZ, S. Further Studies with the Tuberculin Ointment Patch Test. J.A.M.A. 109, 25:2042 (Dec. 18), 1937.

ASSOCIATION NEWS

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

George M. Anderson, M.D., Morgan, Ga., Director, Calhoun County Health Dept.

Verson M. Boothby, Chestnut Hill P.O., Lebanon, Conn., Health Officer

A. Edward Bostrom, M.D., 1512 S.E. 16 Ave., Portland, Ore., Assistant State Health Officer

Frank A. Calderone, M.D., C.P.H., Jericho Tpke., Westbury, N. Y., Epidemiologist, New York State Dept. of Health

George R. Carpenter, M.D., Health Dept., Bristol, Va., Health Officer, Bristol-Washington County Health District

Hilary J. Connor, M.D., Wallum Lake Sanatorium, Wallum Lake, R. I., Superintendent

George M. Decherd, M.D., Breckenridge Hospital, Austin, Tex., Assistant City Health Officer

Reginald G. M. Ehlers, M.D., Court House, Helena, Mont., City-County Health Commissioner

Richard H. Fletcher, M.D., 1412 Smith Tower, Seattle, Wash., Assistant State Director of Health

Thomas E. Gibson, M.D., Eaton County Health Dept., Charlotte, Mich., Director

John B. Hall, Jr., M.D., 364 E. 48th, Chicago, Ill., Medical Officer, State Dept. of Public Health

Donald M. Harris, M.D., Box 443, North Platte, Nebr., Medical Director of District Health Unit 3

Coit I. Hughes, M.D., State Board of Health, Phoenix, Ariz., Superintendent

Robert H. Onstott, M.D., Holmes County Health Dept., Lexington, Miss., Director

Owen W. Parker, M.D., Shipman Hospital, Ely, Minn., City Health Officer

Arthur L. Ringle, M.D., C.P.H., Grandview Apts., Kelso, Wash., Cowlitz-Wahkiakum County Health Commissioner

Michael T. Russell, 23 Moreland St., Brockton, Mass., Executive Officer, Board of Health

Erwin C. Sage, M.D., C.P.H., City Hall, Burlington, Ia., Director, Des Moines County Health Unit

William R. Willard, M.D., Dr.P.H., Pocomoke City, Md., Deputy State Health Officer

Laboratory Section

Edward B. Anderson, United Dairies, Ltd., Wood Lane, London, W12, England, Chief Chemist

Gilbert B. Ayres, Ph.D., American Cyanamid Co., Stamford, Conn., Research Bacteriologist

John H. Beltz, 3340 N. Broad St., Philadelphia, Pa., Chemist and Bacteriologist, Bell and Beltz Laboratories

Elizabeth C. Brown, 5700 Clemens Ave., St. Louis, Mo., Bacteriologist, Dept. of Health

Ida L. Brown, 801 E. 13th St., Oklahoma City, Okla., Instructor in Bacteriology and Public Health, University of Oklahoma, School of Medicine

Irma L. Comstock, State Board of Health Laboratory, Jefferson City, Mo., Laboratory Technician

Edward G. Curtiss, 143 Court St., Elyria, O., City Chemist

R. Eugene Dyer, M.D., National Institute of Health, Washington, D. C., Chief, Division of Infectious Diseases

Lan L. Hewlett, 710 W. 19th, Austin, Tex., Bacteriological Technician, State Health Laboratory

Donlin M. Long, 714 Adams St., Jefferson City, Mo., Assistant Chemist, State Board of Health Laboratories

Alice G. Mann, 323 E. 17 St., New York, N. Y., Laboratory Assistant, Dept. of Health Laboratories

Alton M. McKissick, 309 Market St., Knoxville, Tenn., Director, Knoxville Branch Laboratory

Lucy Mishulow, 323 E. 17 St., New York, N. Y., Bacteriologist, Dept. of Health

Agustin M. Montero, M.D., J. A. Saco alta

31-A, Santiago, Cuba, Director of Oriente Division of National Health Laboratory

Nathan Nagle, 33 Municipal Courts Bldg., St. Louis, Mo., Supervisor of Bacteriology, City Health Division Laboratory

Leonard J. Piccoli, Ph.D., Fordham University, Bronx, N. Y., Professor and Head, Dept. of Physiology and Hygiene

Charles S. Puntney, 426½ W. Capitol Ave., Springfield, Ill., Bacteriologist, State Dept. of Public Health

Clare Wilcox, 225 E. 79 St., New York, N. Y., Bacteriologist, New York University

Vital Statistics Section

Alfred H. Sellers, M.D., D.P.H., Ontario Dept. of Health, East Block, Toronto, Ont., Canada, Medical Statistician

Public Health Engineering Section

Robert L. Davison, 40 W. 40 St., New York, N. Y., Director of Housing Research, John B. Pierce Foundation

Harold B. Gotaas, 2 Westwood, Chapel Hill, N. C., Assistant Professor of Sanitary Science

Jack C. Rogers, 130 S. Elm St., Centralia, Ill., Sanitary Engineer and Milk Inspector, St. Louis Dept. of Public Welfare

John E. Vogt, 317 N. Franklin St., Mt. Pleasant, Mich., Sanitary Engineer, Isabella County Health Dept.

Frederick D. Zollner, 310 Riverside Ave., Scotia, N. Y., Assistant Sanitary Engineer, New York State Dept. of Health

Industrial Hygiene Section

Louis Press, 15 Hollingsworth St., Lynn, Mass., Assistant Industrial Hygienist, State Bureau of Occupational Diseases

Robert T. Pring, Utah Copper Co., Garfield, Utah, Industrial Hygienist

Food and Nutrition Section

Anna E. Boller, 66 Woodside Rd., Riverside, Ill., Dietitian, Central Free Dispensary, Rush Medical College

Harlow H. Hall, U. S. Dept. of Agr., Bur. of Chemistry and Soils, Washington, D. C., Associate Bacteriologist, Food Research Division

Pauline Murrah, 125 Worth St., New York, N. Y., Nutrition Instructor, Dept. of Health

Child Hygiene Section

David Kliger, M.D., 11814 Dexter, Detroit, Mich., Medical Coördinator of Wayne County for Crippled and Afflicted Children's Acts

Arthur W. Thomas, M.D., State Dept. of Health, Columbus, O., Chief, Bureau of Child Hygiene

Public Health Education Section

John E. Codwell, 1114 Robin St., Houston, Tex., Director of Physical and Health Education, Wheatley High School

Ruth Connely, 545 Canyon Rd., Sante Fe, N. M., Executive Secretary, New Mexico Tuberculosis Assn.

Emily A. Spraker, 17 Ford Ave., Oneonta, N. Y., Executive Secretary, Otsego County Tuberculosis and Public Health Assn.

Jesse R. Thompson, D.D.S., 1110 State Capitol Bldg., Lincoln, Nebr., Director of Dental Hygiene, Division of Maternal and Child Health, State Dept. of Health

Myron T. Townsend, Ph.D., Illinois Wesleyan University, Bloomington, Ill., Head of Dept. of Biology

Ruth H. Weaver, M.D., 1433 Spruce St., Philadelphia, Pa., Epidemiologist, Dept. of Public Health

Public Health Nursing Section

Jane S. Dayton, R.N., 107 W. Madison Ave., Johnstown, N. Y., District State Supervising Nurse

Pearl Shalit, R.N., 1116 Ashland Ave., St. Paul, Minn., Educational Director, St. Paul Family Nursing Service

Margaret A. Stockton, R.N., 10 Mountain Rd., Ravena, N. Y., Rural Public Health Nurse, New York State Dept. of Health

Emily P. H. Talbot, Babies Hospital, Philadelphia, Pa., Superintendent and Director of Nursing Service

Julia W. Wheeler, St. Lawrence Inn, Gouverneur, N. Y., Assistant Supervising Nurse, State Dept. of Health

Odessa M. Winters, 319 E. 15 St., Tulsa, Okla., Acting Director of Nursing, State Dept. of Public Health

Epidemiology Section

Fred W. Caudill, M.D., C.P.H., State Dept. of Health, Louisville, Ky., Director, Division of Communicable Diseases

Gustav A. I. Hallden, M.D., Kungsgaten 1 a, Vanersborg, Sweden, Medical Officer of Health

Alexander D. Langmuir, M.D., State Office Bldg., Albany, N. Y., Medical Consultant, Bureau of Pneumonia Control, State Dept. of Health

Abel Mejia, Conde a Carmelitas 6, Caracas, Venezuela, S. A.

Unaffiliated

William Boaz, Pan American Sanitary Bureau, Washington, D. C., Chief Sanitary Engineer

R. C. Dalgleish, D.D.S., 124 Capitol Bldg., Salt Lake City, Utah, Director, Division of Dental Health, State Board of Health

Mildred R. de Long, Durfee Intermediate School, 2470 Collingwood, Detroit, Mich., Student

Ralph H. Fash, 828½ Monroe St., Fort Worth, Tex., Consulting Chemist

Maurice B. Folb, Sr., P. O. Box 186, Chapel Hill, N. C., Student Sanitarian

Waldo R. Hainsworth, 621 Pennsylvania Ave., Norfolk, Va., Sanitarian, City Health Dept.

A. E. Hollenbeck, 618 Packard, Ann Arbor, Mich., Trainee

Marie E. Kopp, Ph.D., 67 Echo Lane, Larchmont, N. Y., Research Worker in Maternal Health and Eugenics

Francis C. Lawler, Sc.D., Univ. of Okla., School of Medicine, Oklahoma City, Okla., Assistant Professor of Bacteriology

Flora M. Lewy, Ph.D., 39th & Chestnut St., Philadelphia, Pa., Study group on public health, League of Women Voters

Sarah I. Morris, M.D., Henry Ave., & Abbotsford Rd., Philadelphia, Pa., Professor of Preventive Medicine, Woman's Medical College of Penna.

C. J. A. Paule, M.D., 322 N. State St., Ann Arbor, Mich., Trainee, Social Security

Dr. Thomas G. Perrin, 4a Calle de las Artes 71, Mexico, D. F., Mex., Laboratorios de Biologia Medica

William M. Smith, M.D., 615 N. Wolfe St., Baltimore, Md., Physician in training, New York State Dept. of Health

John D. Spiggle, c/o Mullett, New Martinsville, W. Va., State Sanitarian

K. S. Viswanathan, M.B., Harvard School of Public Health, Boston, Mass., Student on leave (Assistant Professor of Hygiene, Medical College, Madras, India

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ROYAL SANITARY INSTITUTE

THE Royal Sanitary Institute will meet in Portsmouth, England, July 11–16.

The Executive Secretary of the A.P.H.A. desires to know of any Fellows of the Association who plan to be in England during this period.

EMPLOYMENT SERVICE

The Employment Service will register persons qualified in the public health field without charge. Public health nurses are registered with the Joint Vocational Service, 122 E. 22 Street, New York, N. Y., with which the Association coöperates.

Replies to these advertisements, indicating clearly the key number on the envelope, should be addressed to the American Public Health Association, 50 W. 50th Street, New York, N. Y.

POSITIONS AVAILABLE

The Department of Civil Service, State of New York, Albany, announces State unwritten examinations for which applications should be filed by February 25 as follows:

No. 28. Assistant Director for Oral Hygiene, Division of Maternity, Infancy and Child Hygiene, Department of Health. Appointment expected at $4,000. Responsibility, to develop a state-wide oral hygiene program. Must be graduates in dentistry and licensed to practise in New York State, with at least 5 years of satisfactory experience and postgraduate study.

No. 29. Chief of Health Education (Health Service), Division of Health and Physical Education, Department of Education. One appointment expected at $5,000. Duties: To organize and supervise the health service program, conducted by the State in the public schools and teaching institutions. M.D. degree required, with license to practise in New York State.

EMPLOYMENT SERVICE (Cont.)

POSITIONS WANTED

HEALTH OFFICERS

Physician, M.D., Johns Hopkins; public health course at Michigan; experienced in school and city health work, will consider an administrative post in eastern United States. **A354**

Experienced physician, administrator, epidemiologist, and teacher, now employed, with C.P.H. from Johns Hopkins and 14 years public health background, will consider position. Prefers epidemiology in city or state department. Excellent references. **A355**

Physician, M.D., University of Maryland; C.P.H., Johns Hopkins; broad experience in county public health administration, will consider opening of better class. **A346**

Physician, M.D., Yale, completing M.S.P.H. at Columbia; good clinical background; will consider appointment in child health, epidemiology, or public health administration. **A350**

Physician, M.D., Western Reserve; short course for health officers, Johns Hopkins; with county and state experience, wishes administrative or epidemiological position; North or West preferred. **A349**

Physician, M.D., Northwestern University; Dr.P.H., Yale; will consider appointment in general administration, infant welfare, or epidemiology. **A300**

CHILD HYGIENE

Women physician, M.D., Creighton Medical School, with extensive experience in maternal, infant and child hygiene, and special interest in crippled children's service, desires position in field work. **C301**

Woman physician, M.D., Yale, Dr.P.H., Yale; experienced in pediatrics and administration of state bureau, will consider attractive opening. **C348**

SANITARY ENGINEERING

Graduate Sanitary Engineer with service under U. S. Public Health Service and State Departments of Health, especially interested in filtration plant design and operation and shellfish sanitation, seeks employment. **E356**

Sanitary Engineer, courses at Rutgers University, with 17 years' experience in design, research, and construction of water and sewage plants, as well as aerial pollution surveys, desires position, preferably research. **E321**

STATISTICIAN

Young man with 8 years' experience in public health statistics in well known national organization, and degree in Business Administration, now employed, will consider statistical position or combination with office administration. **A310**

MISCELLANEOUS

Dentist, graduate of Temple University, with excellent postgraduate experience, desires position in administrative aspects of dental hygiene. **M352**

Young woman, M.S., University of Minnesota, wishes position as health education director. An excellent background of experience covers directorship of a state laboratory of hygiene, health education director of a state tuberculosis association, instructor in bacteriology and health education, and executive secretary of a dairy council. **M326**

Woman with excellent preparation and wide experience in health education field; organization, administration, supervision, and program-making in city, rural and state work. Now employed but would consider good opportunity. $3,500 minimum. **M316**

Experienced teacher, B.S., Massachusetts Institute of Technology; graduate courses Harvard School of Public Health, wishes teaching position or will consider statistical or health education opportunity. **M353**

Young man, at present college teacher of hygiene and physical education and experienced in university medical service, desires position as executive in public or private health organization. **M357**

NEWS FROM THE FIELD

Better Care for Mothers and Babies

UNDER the auspices of the Children's Bureau of the U. S. Department of Labor, a conference on Better Care for Mothers and Babies was held January 17 and 18 in Washington. More than 400 persons were in attendance from 47 states and the Territories of Hawaii and Alaska, and there were included representatives of 86 coöperating agencies. The American Public Health Association was represented by the President, Dr. A. T. McCormack, Dr. John L. Rice of New York City, and the Executive Secretary.

The conference was addressed by Frances Perkins, Secretary of Labor; Katharine F. Lenroot, Chief of the Children's Bureau; Dr. Thomas Parran, Surgeon General of the U. S. Public Health Service; Josephine Roche, former Assistant Secretary of the Treasury; Dr. Fred L. Adair of Chicago; Dr. Robert L. DeNormandie of Boston; Dr. Martha Eliot of the Children's Bureau; James Roosevelt, Secretary to the President; and other leaders.

That there has been an unnecessary loss of maternal and infant life was made clear by the facts presented, indicating that more than 14,000 women in the United States die from causes connected with childbirth each year, leaving at least 35,000 children motherless. In addition, more than 75,000 infants are stillborn and more than 69,000 infants die during the first month of life. The Findings Committee pointed out that there has been little reduction in the maternal mortality rate during the 22 years for which records are available. It was agreed from the testimony of several committees of physicians in various parts of the country, after careful evaluation of the causes of death of individual mothers, that from one-half to two-thirds of maternal deaths are preventable. Although the death rate for infants in the first year of life has steadily declined during the last 22 years, there has been little decline in the death rate for the first month of life which accounts for nearly half the total loss of life in the first year.

That there are very important economic aspects of this problem was made evident by the fact that approximately 840,000, or more than one-third of the total births each year, occur in families which are on relief or which have total incomes including home produce of less than $750 a year. In 1935, 14 per cent of all live births in the United States occurred in the 6 most prosperous states which received 27 per cent of the total income. Fourteen per cent of all live births occurred in the 6 poorest states which received only 5 per cent of the total income.

The conference concluded that, while certain communities through public and private effort have provided a physician's care and hospital care for mother and child at birth when such care cannot be paid for by the family, there has nevertheless been no widespread effort on a national scale to make medical and nursing care at the time of delivery generally available either in the home or in the hospital for mothers in families which cannot obtain such care unaided. A quarter of a million women were delivered in

1936 without the advantage of a physician's care and more than 15,000 had no care except that of the family or neighbors.

The conference concluded that preserving the lives and health of mothers and babies is of such paramount importance to all the people that it fully warrants immediate and concerted national consideration and national action. Urging that better facilities should be provided in medical schools, both for undergraduate and graduate instruction, to medical students, physicians, and nurses, the conference went on to the conclusion that the American standard would demand the supervision of each mother throughout her pregnancy by a qualified local physician aided by a public health nurse, together with care at delivery by the same qualified local physician and a nurse trained and experienced in delivery nursing care. Postpartum and postnatal medical and nursing supervision were regarded as most important, and the provision of facilities for consultation service by obstetricians and pediatricians to aid general practitioners in their care of mothers and babies was concluded to be essential.

With special reference to the public health aspects of this problem it was recommended that public health services both in cities and rural areas be further developed for the conduct of complete service in maternity and for the new-born infant through utilizing available competent service under both public and private auspices, extending and approving the public services when they are not adequate to meet the need. The local community must provide maternal and infant care as needed as a part of its public health responsibility, the state giving leadership, financial assistance, specialized service, and supervision in the development of local services as required, and the federal government to assist the states through financial support, research, and consultant service.

Specifically it was recommended that Title V, Section 502, of the Social Security Act be amended to authorize a larger sum to be appropriated annually to the states for maternal and child health services with provision that the increased payments to the states should be used for the improvement of maternal care and the care of new-born infants.

The conference concluded that the extent to which this plan can be made a reality will depend upon the desire of the public to be served adequately, upon the leadership of the professional groups in the provision of service of high quality, and upon the development by public agencies in coöperation with private agencies and individuals of a program of education and of medical and nursing care adequate to meet the needs of the various groups in the population.

INDUSTRIAL HYGIENE AND TOXICOLOGY COURSE

THE Department of Chemistry of the University of Pittsburgh, Pittsburgh, Pa., will give a new course on "Industrial Hygiene and Phases of Toxicology," beginning February 9 and consisting of a series of 16 lectures by Emerson Venable,† of the Westinghouse Research Laboratory, Pittsburgh, formerly for several years with the Mine Safety Appliances Company studying protective methods and devices.

This is said to be the first course of its kind to be offered primarily to students of science not directly connected with medicine or public health. It is designed to promote knowledge of the medical and pharmacological significance of the materials handled by the average graduate in chemistry.

* Fellow A.P.H.A.
† Member A.P.H.A.

COURSES IN SYPHILIS

A PROGRAM of postgraduate study in syphilis has been arranged at New York University College of Medicine to extend from February 15 to June 15, 1938. The course is made possible by a grant from the U. S. Public Health Service through the New York State Department of Health.

The training is intended primarily for physicians already working in state and local departments of health, but other physicians may be accepted. The work will be done in the New York University College of Medicine, in the syphilis clinics and wards of Bellevue Hospital, and in the various laboratories and bureaus of the New York City Department of Health devoted to venereal disease study.

Physicians at present engaged in health department work may apply either directly to the office of the dean at the College of Medicine, 477 First Avenue, or through their state health departments. Others should apply directly to the college.

The Health Officer, published by the U. S. Public Health Service, for October 1937, lists similar courses in Massachusetts at Harvard University, in Tennessee at Vanderbilt, in Ohio at Western Reserve, and in California at a university to be selected. A course is under way at Howard University Medical School for Negroes in Washington, D. C., and at the Johns Hopkins School of Hygiene and Public Health, Baltimore. It is stated also that arrangements have been made by the Pennsylvania State Department of Health to offer such a course with the University of Pennsylvania at Philadelphia.

$61,000,000 FOR HUMAN NEEDS

A $61,000,000 gift to charity, to be used during 1938 to aid people of 311 cities, was reported to Charles P. Taft, Chairman of the Community Mobilization for Human Needs, by community chests throughout the United States and Canada.

Coöperative campaigns sponsored by the Mobilization during the last 3 months of 1937 for social and health agencies have been successful in raising 3 per cent more than they did in 1936, according to records of its administrative agency, Community Chests & Councils, Inc. Mr. Taft said:

> An increase of 3 per cent in charitable gifts, made in the face of a falling market and disturbed labor conditions, is a triumph of community spirit. . . .

With the results expected from 155 additional chest campaigns—including those still to be held by Boston, Philadelphia, Rochester, and Cincinnati—a total of more than $83,000,000 is anticipated for the support of community philanthropies in 1938.

This sum will be appropriated during 1938 to about 8,500 local agencies providing such varied services as aid to dependent children and to families in distress, hospitals and home nursing care for the sick, settlements and day nurseries, guidance and character building of youth through clubs and camps.

Fully 9,000,000 contributors, it is estimated, will have added their gifts, large and small, to reach the total.

NEW DIRECTOR OF PUBLIC HEALTH IN MEXICO

NEWS dispatches under the date of January 4 from Mexico City indicate that Dr. Leonidas Almazan, former Minister from Mexico to Germany, was named Director of Public Health succeeding General Dr. Jose Siurob who has been transferred to the Directorship of the Federal District including Mexico City. The dispatches indicate that Dr. Enrique Hermandez Alvarez has been appointed Secretary of Public Welfare in a post which now has important relationships to the Department of Public Health.

NATIONAL ASSOCIATION OF SANITARIANS

THE National Association of Sanitarians held its annual convention on December 11, 1937, in San Luis Obispo, Calif.

Sanitarians present represented 20 full-time health departments and 16 trainees were present from the Western School of Public Health in session at the University of California, Berkeley; 103 delegates attended the banquet.

Officers elected for 1938 include:

President—Jack C. Baker,† San Diego County Health Department, San Diego, Calif.

First Vice-President—L. D. Spence, San Bernardino County Health Department, San Bernardino, Calif.

Second Vice-President—William V. Butler, Oakland City Health Department, Oakland, Calif.

Treasurer—Charles G. Kahlert, Los Angeles County Health Department, Los Angeles, Calif., and a board of 9 directors, from Arizona, California, Utah, and Washington, was elected.

A resolution was passed authorizing the Board of Directors to publish an official magazine to be known as "The Sanitarian."

CHILI HONORS DR. GEIGER

THE Government of Chili has granted to J. C. Geiger, M.D.,* the decoration "Cruz de Caballero de la Orden del Merito," for good friendship and assistance to Chili and for his excellent work in and outstanding contributions to public health.

DYE PREPARATIONS

DR. George C. Ruhland, Health Officer of the District of Columbia, has announced that "Lash Lure" and similar dye preparations are prohibited from sale, distribution and use in the District of Columbia. Similar prohibitions are in force for New York City and Chicago. The Health Department chemical laboratory reported that an analysis of the sample of "Lash Lure" shows it to consist of para-phenylene diamine or a closely related compound, and a small amount of magnesium carbonate.

CONNECTICUT CRIPPLED CHILDREN PROGRAM

UNDER the Social Security Act, Connecticut will receive $60,000 from the federal government to be added to a similar amount appropriated by the last session of the general assembly for the state's crippled children program, it is reported.

The program will include the establishment of 5 permanent diagnostic clinics throughout the state.

SOCIAL HYGIENE MEETING

THE American Social Hygiene Association will hold its Annual Meeting this year in New York City, as a part of the New York Regional Conference which will cover 3 days, February 1, 2, and 3 (Social Hygiene Day). Headquarters will be the Hotel Astor.

SAFETY CAMPAIGN

IT has been announced by the National Safety Council that a $25,000 contribution to traffic safety has been made.

The Automotive Safety Foundation will use the gift for additional and personal awards in the 1937 National Traffic Safety Contest conducted by the National Safety Council. The contest ended December 31 and prize winning cities and states will be announced early in April.

Twelve police officers and eight traffic engineers will be selected from the prize-winning cities and states in the Council's contest and sent to Northwestern and Harvard Universities for a year's training in traffic safety.

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* Fellow A.P.H.A.
† Member A.P.H.A.

MILITARY SURGEONS MEETING

THE next annual meeting of the Association of Military Surgeons will be held at the Mayo Clinic, Rochester, Minn., October 13–15.

The meeting will be held in conjunction with the Medico-Military Inactive Duty Training Unit, which is under the auspices of the Mayo Foundation. This unit is composed of several hundred medical officers, active and reserves, of the Army, Navy, U. S. Public Health Service, National Guard, and Veterans' Administration.

UNIVERSITY OF ILLINOIS BUILDING READY

THE new building containing the medical and dental laboratories of the University of Illinois has been completed and occupied.

Seven of the 15 floors are devoted to the medical facilities and the rest to the dental clinics. The building connects through corridors with a similar unit entirely occupied by the medical school and with the Illinois Research and Educational Hospital, which supplies the patients and nurses. A cancer clinic is being prepared in the basement, with $300,000 already appropriated for radium and equipment, it is reported.

David J. Davis, M.D.,† is Dean of the Medical School; Frederick B. Noyes, D.D.S., of the Dental School; and Major H. Worthington, M.D., is in charge of the research and educational hospital.

METABOLIZED VITAMIN D MILK

THE Council on Foods of the American Medical Association have voted to accept pasteurized metabolized vitamin D milk and to grant use of the seal of acceptance to licensed dairies that conform to rules and regulations of the council.

Metabolized vitamin D milk is produced under the joint sponsorship of Standard Brands, Incorporated, and the Wisconsin Alumni Research Foundation. The irradiated dried yeast intended for use in the feeding of cows may be sold by Standard Brands, Incorporated, only to dairymen licensed by the Wisconsin Alumni Research Foundation. The approved feeding schedule is made a part of the license agreement and before a license is issued the dairyman must present a statement from his local health department, medical milk commission, or other official milk control body to the effect that he is responsible, in good standing, and qualified to produce the milk under proper conditions.

The vitamin D content of the milk produced, as shown by repeated bioassays, is not less than 400 units of vitamin D per quart. The requirements and allowable claims for metabolized vitamin D milk are the same as for other types of vitamin D milk containing 400 U.S.P. units of vitamin D per quart.

RHODE ISLAND ASSOCIATION OFFICERS

AT the Third Annual Meeting of the Rhode Island Public Health Association, held January 11, new officers were elected as follows:

President—Albert Vandale, M.D., Pawtucket
First Vice-President — Fenwick Taggart, M.D., East Greenwich
Second Vice-President—George L. Salisbury, M.D.,* North Kingstown
Secretary and Treasurer—Michael J. Nestor, M.D.,† Providence
Corresponding Secretary—Morris L. Grover, M.D., M.P.H.,* Providence
Executive Council—C. H. Bryant, Tiverton; James P. O'Brien, M.D.,† Woonsocket; Daniel S. Latham, M.D.,† Cranston; Edward A. McLaughlin, M.D.,† Providence.

KIWANIS HEALTH SERVICE

ACCORDING to the *Journal of the American Medical Association*, the Florida District Convention of Kiwanis

* Fellow A.P.H.A.
† Member A.P.H.A.

International at St. Augustine has adopted a resolution making the creation of full-time health service through the county unit plan and under the supervision of the State Board of Health one of the major projects of Kiwanis. The resolution suggested that the plan be recommended and sponsored before Kiwanis International as a national project.

SKIN IRRITANTS REPORT AVAILABLE

HENRY FIELD SMYTH, M.D., Dr.P.H.,* of the University of Pennsylvania, Philadelphia, has prepared a report representing a combination of the last three Skin Irritants reports presented to the Industrial Hygiene Section, A.P.H.A., and covering a 9 year period from 1926 to 1934, completely indexed by author and subject. Dr. Smyth offers to loan this copy to those interested, provided they are willing to pay postage both ways and will return the copy within two weeks.

BIBLIOGRAPHY ON VOLATILE SOLVENTS

J. J. BLOOMFIELD, B.S.,* Chairman of the Industrial Hygiene Section, A.P.H.A., has announced that the 78 page Bibliography on Volatile Solvents presented at the 66th Annual Meeting in New York City by Henry Field Smyth, M.D., Dr.P.H.,* of the University of Pennsylvania, can now be supplied in limited numbers of copies by the Industrial Hygiene Section of the U. S. Public Health Service. This report includes a review of the literature for 1934–1936, together with an annotated bibliography.

NEGRO STUDENTS' TUBERCULOSIS STUDY

A STUDY of the health services for Negro college students in ten states has been started by Dr. Paul B. Cornely,† director of student health service of Howard University, Washington, D. C. The study, which is being sponsored by the National Tuberculosis Association, will take Dr. Cornely to Virginia, West Virginia, North Carolina, South Carolina, Georgia, Alabama, Tennessee, Kentucky, Maryland and Pennsylvania.

Coöperating with Dr. Cornely in his study will be the tuberculosis associations, health officers and educators in the states visited.

ORDER OF MERIT AWARDS

THE Order of Merit of Carlos Finlay was recently conferred on the following members of the faculty of Cornell University Medical College, New York, N. Y., as a recognition of their medical and public health services to Cuba:

Dr. Henricus J. Stander
Wilson G. Smillie, M.D.*
Dr. Foster Kennedy
Edgar Mayer, M.D.†
Morton C. Kahn, Ph.D.†

WATER PLANT MANUAL

THE Texas Division of the Southwest Section, American Water Works Association, announces that a manual for the guidance of water plant operators, sponsored by the Section, has been prepared and will be on sale by the middle of February.

This volume will be reviewed in the *American Journal of Public Health*.

INDIANA'S NEW HEALTH UNITS PERMANENT

THE Indiana State Department of Health recently announced that the 4 district health units established during the flood at Princeton, Huntingburg, New Albany, and Rising Sun have been placed on a permanent basis.

A new district department was set up recently at Bloomington, including Monroe and Brown Counties. Later it is expected that Johnson, Lawrence, and Morgan Counties will be added to this district.

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* Fellow A.P.H.A.
† Member A.P.H.A.

COURSES IN EDUCATION OF THE HANDICAPPED

TEACHERS College, Columbia University, New York, offers for the year 1938–1939 a limited number of scholarships and teaching fellowships for graduates of normal schools and colleges and for teachers now in service in fields of the handicapped who wish to continue their study programs in a combination of courses given at Teachers College.

Scholarship awards may include tuition, maintenance, and cash stipends. The amount of the stipend will vary with the individual case.

Application forms for scholarships and fellowships may be obtained by writing to Professor Merle E. Frampton, Teachers College, Columbia University, 525 West 120th Street, New York, N. Y. Applications must be filed not later than May 1, 1938.

CHARLES HERBERT LA WALL

CHARLES Herbert La Wall, Phar.D., Sc.D.,* distinguished pharmacist and chemist, Dean of Pharmacy of the Philadelphia College of Pharmacy and Science and Senior Member of LaWall and Harrisson, Consulting Chemists of Philadelphia, Pa., died December 7, 1937, at the age of 66.

Dr. LaWall was connected with the *United States Dispensatory*, beginning as associate editor in 1909 on the 20th edition and continuing as co-author with Dr. Horatio C. Wood, Jr., upon the 21st, and of the recent 22nd edition of this standard reference work. He likewise served as a co-author of the 7th and 8th editions of *Remington's Practice of Pharmacy* with Dr. E. Fullerton Cook. He wrote the historical volume, *Four Thousand Years of Pharmacy; An Outline History of Pharmacy and the Allied Sciences*, which has come to be regarded as a standard reference work on chronology of this branch of science.

He was appointed United States Representative on the League of Nations International Committee for Assaying Opium; he received the Remington Medal from the American Pharmaceutical Association in 1927; was President of the American Pharmaceutical Association in 1919, and President of the Pennsylvania Pharmaceutical Association in 1911. He served in a similar capacity to the American Association of Colleges of Pharmacy in 1923, and during the World War was a member of the War Industries Board.

ECONOMIC LOSSES IN PREVENTABLE DISEASE

THE following quotations are taken from Dr. Thomas Parran's address before the Association of Life Insurance Presidents, December 2, 1937:

> Sickness and death rates of previous years are inadequate as yardsticks for the present. Rather than to say the health of the nation is good, it is more accurate to say the health of the nation is better than the distressingly high rates of past years. To stand still in public health is to regress. Public health is a dynamic science. It is extending the horizon of knowledge year by year . . . Give us a weapon for combating a new disease and medicine has a responsibility for seeing that it is used.
>
> It is possible, by applying the public health knowledge we now have, to cut down greatly the economic losses caused by the preventable diseases. The monetary saving resulting from the prevention of these causes of illness and death would begin immediately. The accumulation of savings in a generation would be vast. It would amortize the money spent to effect this economy. It is far less expensive to control these diseases than to continue to pay tax money, charity, personal savings, and sound insurance dollars for the needlessly sick and the premature dead.

* Fellow A.P.H.A.
† Member A.P.H.A.

PERSONALS

Central States

LESLIE V. BURKETT, M.D.,† of Midland, Mich., formerly Health Officer of Midland County, has been appointed Health Officer for Genesee County.

ROBERT C. FARRIER, M.D.,† who recently resigned as Director of the Delta County Health Department with headquarters in Escanaba, Mich., will take charge of the new Illinois State Department of Health district health unit to include East St. Louis, Centerville, Canteen, and Stites, with headquarters in East St. Louis.

DR. THOMAS E. GIBSON, of Flint, Mich., recently resigned as Health Officer of Genesee County to accept a similar position in Eaton County, to succeed DR. JOSEPH W. DAVIS, resigned.

G. HOWARD GOWEN, M.D.,† has resigned as Assistant to the Chief, Division of Communicable Diseases, Illinois State Department of Health, Springfield, Ill., to direct the new public health unit comprising Champaign and Urbana, Ill. The new health district will replace the former separate health activities in the two townships.

DON W. GUDAKUNST, M.D.,* has been appointed Health Commissioner of the State of Michigan, effective January 3. Dr. Gudakunst has served for the past 8 years as Deputy Health Commissioner of the Detroit Department of Health, with which organization he has been associated for the past 14 years. As State Commissioner of Health of Michigan, he succeeds C. C. SLEMONS, M.D.,* of Grand Rapids.

DR. VAUGHN L. HARTMAN, of Medina, Ohio, resigned as Health Commissioner of Medina County recently, to become Assistant Health Commissioner of Cuyahoga County.

DR. WILLIS L. JACOBUS, JR., of Ottawa, Kans., has been appointed Health Commissioner of Franklin County, to fill the unexpired term of his father, the late DR. WILLIS L. JACOBUS.

LORAN E. ORR, M.D.,† formerly of Greenview, Ill., has been appointed Coördinating Epidemiologist to the State Department of Health, Springfield.

DR. JACOB A. PINSKER, of Wichita, Kans., has been appointed Health Officer of Reno County, Kans., succeeding DR. LEE O. FORNEY, who resigned after 19 years to enter private practice.

DR. CHARLES M. STARR, of Larned, Kans., has been appointed Health Officer of Pawnee County.

DR. WILLIAM B. TURNER II, of Wooster, Ohio, has been appointed to succeed DR. EDWARD M. THOMPSON, of Munfordville, Ky., as Health Officer of Hart County, Ky.

Eastern States

ARTHUR H. CUMMINGS, M.D.* formerly at Saranac Lake, N. Y., has been transferred to Binghamton as New York State District Health Officer.

H. BURTON DOUST, M.D., has been appointed Commissioner of Health of Syracuse, N. Y., succeeding GREGORY D. MAHAR, M.D.†

RAYMOND D. FEAR, M.D., DR.P.H.,* Health Officer of Stamford, Conn., has been appointed District Health Officer on the staff of the New York State Department of Health, in charge of the Tompkins County District.

DR. EDWARD E. HALEY, of Buffalo, N. Y., has been appointed Deputy Commissioner of Health and Director of the Division of Communicable Dis-

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eases in the Buffalo Health Department, succeeding the late DR. CHARLES A. BENTZ.

DR. AUGUSTUS J. HAMBROOK, Troy, N. Y., was recently appointed a member of the New York State Advisory Council on Health and Physical Education in Public Schools, succeeding DR. FLOYD S. WINSLOW, of Rochester.

ERNEST M. MORRIS, A.B., M.D., C.M.,* Commissioner of Health of Fall River, Mass., for 8 years, has resigned to join the staff of the Harvard School of Public Health, Harvard University, Boston, Mass.

DR. FREDERICK F. RUSSELL, Professor of Preventive Medicine and Epidemiology and Hygiene, Harvard University Medical School, Boston, Mass., was recently awarded the Buchanan Medal of the Royal Society of England, for his work in relation to public health problems on behalf of the International Health Division of the Rockefeller Foundation. Dr. Russell was General Director of the Division from 1923 to 1935.

Southern States

HUGH B. COTTRELL, M.D., C.P.H.,† of Indianola, Miss., since 1935 Director of the Sunflower County Health Department, has been appointed as Director of the field unit which supervises the programs of the county health units for the Mississippi State Board of Health.

SAMUEL REED DAMON, PH.D., became Director of Laboratories for the Alabama State Department of Public Health on January 1. Dr. Damon was graduated from Brown University in 1916 with a Ph.D. degree from the same institution in 1921. Since his graduation he has been connected with the Department of Bacteriology in the School of Hygiene and Public Health, Johns Hopkins University, Baltimore, first as instructor and, since 1927, as Associate Professor.

DR. JULIUS E. DUNN, of Fort Payne, Ala., for 2 years Health Officer of DeKalb County, has been appointed Health Officer of Lauderdale County, with headquarters in Florence.

DR. FORREST S. ETTER, of Bartlesville, Okla., has been appointed Health Superintendent of Washington County.

DR. CHARLES R. GILLESPIE, of Natchez, Miss., Health Officer of Adams County, has been appointed as Director of Health in Sunflower County.

DR. GILES E. HARRIS, of Hugo, Okla., has been appointed Health Superintendent of Choctaw County, to succeed DR. WALTER N. JOHN, of Hugo.

DR. ANDREW HEDMEG, formerly of Lexington, Miss., has been appointed Health Officer of Adams County, with headquarters at Natchez, Miss.

DR. JAMES W. MCMURRAY has been appointed Director of the Broward County Health Unit, with headquarters at Fort Lauderdale, Fla., succeeding PAUL G. SHELL, M.D.,† who has entered private practice in Tampa. Dr. McMurray was formerly Director of the Gulf-Calhoun-Franklin unit, with headquarters at Apalachicola.

DR. THOMAS E. MORGAN, Health Officer of Pinellas County, Fla., with headquarters in Clearwater, has been appointed Regional Medical Consultant to the Children's Bureau of the U. S. Department of Labor for the Southeastern District. Dr. Morgan will have his headquarters in Washington, D. C. The Southeastern District includes: District of Columbia, Delaware, Virginia, West Virginia, Georgia, Florida, North Carolina, and South Carolina.

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† Member A.P.H.A.

DR. ORVAL L. PARSONS, of Lawton, Okla., has been appointed Health Superintendent of Comanche County, to succeed DR. LORIN C. KNEE, of Lawton.

EUGENE C. PECK, M.D., M.P.H.,† of Oakland, Md., Health Officer of Garrett County, has been appointed Health Officer in St. Mary's County, the change to take effect when his successor will be named.

RICHARD H. SHRYOCK, PH.D., Professor of History, Duke University, Durham, N. C., recently received the Mayflower Cup awarded by the North Carolina State Literary and Historical Association in Raleigh, for his book "The Development of Modern Medicine," chosen as the "outstanding book by a resident of the state this year."

SAMUEL D. STURKIE, M.D.,† formerly of Oneonta, Ala., has been appointed Health Officer of Chilton County, succeeding JOHN M. KIMMEY, M.D., M.P.H.,† of Clanton, who resigned to become Health Officer of Calhoun County.

DR. EDWARD M. THOMPSON, of Munfordville, Ky., has resigned as Health Officer of Hart County, to take a similar position in Logan County. He will be succeeded by DR. WILLIAM B. TURNER II, of Wooster, Ohio.

Western States

ORVILLE H. BROWN, M.D., PH.D.,† of Phoenix, Ariz., has resigned as Editor of *Southwestern Medicine*.

JAMES S. CULLYFORD, M.D.,† of Denver, Colo., has been appointed Director of the newly created Division of Rural Health Work and Epidemiology of the Colorado State Board of Health.

DR. NORMAN E. MAGNUSSEN, formerly with the Health Department of Seattle, Wash., has been appointed Health Officer of Pierce County.

DR. HOWARD L. MCMARTIN, recently appointed Health Officer of the Twin Falls District, has been made head of the Division of Maternal and Child Welfare in the Idaho State Department of Health.

FRANK S. MORRISON, LL.B., has been appointed Director of Vital Statistics of the Colorado State Board of Health.

DR. ROBERT B. STUMP, formerly of Cleveland, has been appointed Health Officer of the Twin Falls, Idaho, Health District, to succeed DR. HOWARD L. MCMARTIN.

Canada

ROY B. JENKINS, M.D., D.P.H.,† Lecturer in Public Health at the University of Alberta and Medical Officer of Health of the City of Edmonton, Alta., has resigned to become Chief of the Division of Epidemiology in the federal Department of Pensions and National Health.

GEORGE M. LITTLE, M.D., D.P.H.,† of Red Deer, Alta., has been appointed Health Officer of Edmonton.

DEATH

FRANK WILCOX PINNEO, M.D., of Newark, N. J., Secretary of the Essex County Medical Milk Commission, and Secretary of the Essex County Medical Society for the last 20 years, died November 18. Early in his career he became intimately associated with Henry L. Coit, the originator of certified milk, and devoted himself through the rest of his life to the advancement of the interests of certified milk.

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CONFERENCES AND DATES

American Academy of Tuberculosis Physicians. San Francisco, Calif. June 13–14.

American Association of Medical Social Workers. Seattle, Wash. June 26–July 2.

American Association of Pathologists and Bacteriologists. Atlantic City, N. J. May 3–4.

American Association of Psychiatric Social Workers. Seattle, Wash. June 26–July 2.

American Association of Railway Surgeons. Chicago, Ill. September, 1938.

American Chemical Society. Dallas, Tex. April 18–21.

American College of Physicians, Waldorf-Astoria Hotel, New York, N. Y. April 4–8.

American Home Economics Association. Pittsburgh, Pa. June 28–July 1.

American Institute of Nutrition. Johns Hopkins University—School of Hygiene and Public Health. Baltimore, Md. Spring, 1938.

American Medical Association. San Francisco, Calif., June 13–17.

American Orthopsychiatric Association. Chicago, Ill. February 24–26.

American Physicians' Art Association—First National Exhibition. San Francisco Museum of Art, San Francisco, Calif. September, 1938.

American Public Health Association. Kansas City, Mo. October 25–28.

American Roentgen Ray Society. Atlantic City, N. J. September 20–23.

American Social Hygiene Association—New York Regional Conference. Hotel Astor, New York, N. Y. February 1–3.

American Society of Clinical Pathologists. San Francisco, Calif. June 9–11.

American Veterinary Medical Association. New York, N. Y. July 5–9.

American Water Works Association. Hotel Roosevelt, New Orleans, La. April 24–28.

Annual Congress on Medical Education and Licensure. Palmer House, Chicago, Ill. February 14–15.

Association for the Study of Allergy. San Francisco, Calif. June 13–14.

Association for the Study of Internal Secretions. San Francisco, Calif. June 13–14.

Association of Foods and Drug Officials of South Central States. Biloxi, Miss. May, 1938.

Association of Military Surgeons of the United States. Mayo Clinic, Rochester, Minn. October 13–15.

Association of Western Hospitals. San Francisco, Calif. February 28–March 3.

California Association of Dairy and Milk Inspectors. Santa Barbara, Calif. September.

California Association of Health, Physical Education and Recreation. Pasadena, Calif. April 18–19.

California Conference of Social Work. Pasadena, Calif. April 24–28.

California Medical Association. Pasadena, Calif. May 9–12.

Central Physical Education Association. Minneapolis, Minn. March 30–April 2.

Congress of American Physicians and Surgeons. Atlantic City, N. J. May 2–6.

Congress of Parent-Teachers Association. Battle Creek, Mich. April 20–22.

Dairy Products Association of the Northwest. St. Paul, Minn. April, 1938.

Federation of State Medical Boards of the United States. Palmer House, Chicago, Ill. February 14–15.

Georgia Public Health Association. Atlanta, Ga. May, 1938.

Hawaii Territorial Medical Association. Honolulu, T. H. May, 1938.

Hay Fever Association of America. Sault Ste. Marie, Mich. August 10–September 20.

Hermann Michael Biggs Lecture—Annual. Subject, "Virus Diseases," Speaker, Thomas M. Rivers, M.D. New York Academy of Medicine, New York City. April 8 (8:30 P.M.).

Illinois Dairy Products Association. Springfield, Ill. February 22–24.

International Association for Dental Research. Minneapolis, Minn. May 12–13.

International Association of Medical Museums—American and Canadian Section. Atlantic City, N. J. February 28–March 2.

Iowa Public Health Association. Des Moines, Ia. May, 1938.

Iowa Tuberculosis Association. Ottumwa, Ia. March, 1938.

Manufacturing Chemists Association of the United States. Sky Top, Pa. June 2–3.

Medical Library Association. Boston, Mass., June, 1938.

Medico-Military Inactive Duty Training Unit—under auspices of the Mayo Foundation. Mayo Clinic, Rochester, Minn. October 13–15.

Mississippi Valley Conference on Tuberculosis. St. Louis, Mo. October 1–3.

National Association for Educational Publicity. Atlantic City, N. J. February 26–27.

National Conference of Social Work. Seattle, Wash. June 26–July 2.

National Conference on Weights and Measures. Washington, D. C. June, 1938.

National Education Association. New York, N. Y. June 26–30.

National Negro Health Week. March 27–April 2.

National Tuberculosis Association. Biltmore Hotel, Los Angeles, Calif. June 20–23.

New England Hospital Association. Boston, Mass. March 10–12.

New Mexico Public Health Association. Albuquerque, N. M. June, 1938.

Ohio Federation of Public Health Officials. Columbus, Ohio, April, 1938.

Pennsylvania Public Health Association. Harrisburg, Pa. May, 1938.

Polish Medical and Dental Association of America. Pittsburgh, Pa. August, 1938.

Public Health Association of New York City. New York. April, 1938.

Social Hygiene Day, Second National. Theme, "Stamp Out Syphilis—Foe of Youth." February 3.

Social Work Publicity Council. Seattle, Wash. June 26–July 2.

South Carolina Public Health Association. Myrtle Beach, S. C. May 23–25.

Symposium on Higher Education in the South. Vanderbilt University, Nashville, Tenn. February 5.

Third International Congress for Microbiology. Waldorf-Astoria Hotel, New York, N. Y. September 2–9, 1939.

Western Branch, American Public Health Association. Hotel Multnomah, Portland, Ore. June 6–8.

FOREIGN

World Conference on Leprosy. International Leprosy Association. Cairo, Egypt. March 21.

American Water Works Association—Canadian Section. Windsor, Ont., Canada. March 23–25.